# The Bradshaw Lecture

ON

# CANCER AND ITS ORIGIN.[1]

*Delivered before the Royal College of Surgeons of England on Dec. 9th, 1903,*

BY HENRY MORRIS, M.A., F.R.C.S. ENG.,

SENIOR VICE-PRESIDENT AND CHAIRMAN OF THE COURT OF EXAMINERS OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND; SENIOR SURGEON TO, AND CHAIRMAN OF THE CANCER INVESTIGATION COMMITTEE OF, THE MIDDLESEX HOSPITAL.

MR. PRESIDENT AND GENTLEMEN,—I have chosen cancer, meaning thereby both carcinoma and sarcoma, as the subject of this lecture for several reasons. 1. The discovery of the microbic origin of certain diseases has led to the most painstaking efforts to ascertain, by means of modern bacteriological methods, the cause or causes of cancer. What the result has been I shall endeavour to show. 2. The premature publication of immature and disputable conclusions and of crude and impossible theories has unfortunately aroused false hopes and has attracted the impatient and somewhat too credulous attention of the general public to everything connected with the word "cancer." It would be well, if it were possible, to allay these consequences. 3. No lecture specially on cancer has been given at this College since the last Morton lecture was delivered in May, 1894. 4. This Royal College has for the first time in its history recently embarked upon a great and important scientific inquiry by, conjointly with the Royal College of Physicians of London, undertaking the general direction and control of what may be called a national movement for the investigation of cancer, and it may be of interest to review, although very imperfectly, the general position of the subject at the commencement of this undertaking by the Royal Colleges.

In the 93 years since the foundation of the Hunterian lectures cancer, considered on general lines, not simply as it affects some particular organ or part, was never selected, so far as can now be ascertained, as the subject of a Hunterian lecture. In the Arris and Gale series which, like the Hunterian, was commenced in 1810, Sir James Paget is alone, he having taken for his course of lectures Malignant Tumours in 1852. In the Erasmus Wilson series Mr. H. T. Butlin in 1880 and 1881 lectured on the Relations of Sarcoma to Carcinoma. In 1882 Mr. F. S. Eve gave two lectures on the Etiology of Tumours, and last year (1902) Dr. C. P. White delivered three lectures on the General Pathology of Tumours. Of the Bradshaw lectures only one has been on cancer and that was given by Sir William Savory in 1884, the title of his lecture being "The Pathology of Cancer." Through the public-spirited liberality of Mr. John T. Morton of Caterham Valley two series of three lectures each were instituted in this College with the hope of advancing our knowledge of cancer and the treatment of cancer. The first of these Morton lectures on Cancer and Cancerous Diseases was delivered in 1887 and the last in 1894.

I had thought of prefacing what I have to say to-day on Cancer and its Origin by a short account of the leading views which have been expressed in this country during the last 30 years about cancerous affections. To this end I studied and made epitomes of all the lectures bearing on cancer which have been delivered in this College during that period, as well as of the two great debates on cancer which have taken place within the same period, the one in London in 1874 and the other in Glasgow in 1886. These lectures and debates contain all that was known about cancer and of the theories as to its causation up to the date of their publication, but I found that even the briefest *résumé* of them would extend far beyond the limits of an hour's discourse. With regard to the theories of causation of malignant diseases which have been published since the delivery of the last of the Morton lectures even a mere statement of them would occupy much time and any attempt at a complete account would take up several hours.

Several of the views put forward are mutually exclusive of each other. Thus while some persons attribute to arsenic, some to sugar and confectionery, and some to salted meats the increase of cancer mortality, others regard arsenic as a curative agent and molasses as a sure remedy and others, again, consider common salt and the chlorine given off from it as the means of killing the saccharomycete to which malignant disease is, in their opinion, due—excess of water and deficiency of common salt in the tissues being, in their view, the alpha and "omega" of cancer causation. On the other hand, many of the theories which have been advanced, so far from being contradictory of one another, are in a way and in different degrees necessary for the explanation of the development of any tumour, innocent or malignant. For instance, heredity only takes effect within certain age limits and its tendency is assisted by such agents as injury or chronic irritation; each of these has itself been alleged to be the cause of cancer. But all the various agents, such as heredity, injury, chronic irritation, articles of diet, climate, soil, cancer houses, occupations, mental worry, nationalities, &c., must be set aside as altogether inadequate to be the fundamental and essential cause of the origin of cancer. They at most are merely predisposing or exciting causes, but not one of them is the true, immediate, and essential factor. Injury, irritation, or inflammation may bring about a condition of the tissues favourable to the extension of cancer and may also excite the real factor into action, but, as we are all daily witnessing, these agents have been at work in numberless cases for months or years and yet have failed completely in producing these diseases. With regard to articles of diet, soil, air, localities, &c., all the same objections apply to them as to the old "constitutional doctrine." They may possibly induce a general state of health favourable to the development of cancer if the essential cause of these diseases is present, but if any one or other of them was the essential cause malignant diseases should often commence, not, as is usually the case, as a local, solitary, primary tumour, but as a general carcinomatosis or sarcomatosis.

Dr. Alexander Katz of Hamburg in a paper read before the Berlin Cancer Committee in January, 1902, grouped the alleged causes of cancer formation into the entogenous (or intrinsic) and the ectogenous (or extrinsic). By entogenous causes are understood certain spontaneous and anomalous changes within the organism; by ectogenous causes those derived from outside the body. The entogenous embrace, amongst many others, the causes alleged under the two important theories of Thiersch and Cohnheim. Thiersch's theory and all the variants of it may appropriately be called the "lost balance theories" in contradistinction to the "matrix" or "tumour germ" theory of Cohnheim and his followers. According to Thiersch the beginning of a tumour formation is due to a loss of balance between the epithelial cells and the connective tissue. In carcinoma, for example, this loss of balance occurs during advancing age by the degeneration of the connective tissues and results in an invasion of these tissues by the epithelial cells. In other words, the theory supposes that in its origin carcinoma depends on some cause which produces as age advances a local impairment of resistance, a retrograde process in the sub-epithelial structures, whilst the epithelium maintains its activity or, it may be, acquires a special vigour. This view, Katz says, has never gained a foothold and is only of value in that by means of it the age limit of cancer can be explained. Katz's statement is, however, at variance with the somewhat considerable importance which has been attached to Thiersch's theory, at any rate in this country, for it was accepted as probable by Coats and Maylard in the Glasgow debate; it was adopted in his Morton lecture by Sims Woodhead, who corroborated it by what he found on microscopic examination of the tongues of old people; in principle it has been quite recently supported by Foulerton and by Woods Hutchinson; it appears also in the theory of "unstable equilibrium" of Powell White; and its influence is also traceable in certain other modern theories—as, for example, the "anaplastic" theory of Hansemann.

Hansemann refers the cancer process to a biological change in the parenchymatous cells whereby they become less and less differentiated, lose more and more their functional power, and at the same time increase greatly in their capacity of cell proliferation. Hanau, Renecke, and Hauser incline to Hansemann's theory; and Savory's views, expressed in his Bradshaw lecture, were almost identical, as they predicate a change of cell structure, a loss of cell function, and a return to an embryonic state with its enormous power of cell multiplication.

Thiersch's theory and the other "lost balance theories" are all open to the same objections which the "localists" brought against the "constitutional" theory. To hold that the formation of carcinoma is due to a loss of the normal balance between the epithelium and the connective tissue, the result of advancing age, is to imply the existence of an "all-pervading condition" of the connective tissues and yet that this "all-pervading condition" can give rise to a disease which at its outset at least is strictly localised. A disease so originating is not less of a constitutional disease than one due to a "special material in the blood," and such a theory of cancer is open to all the same arguments as the "blood theory." Indeed, Paget, after pointing out that there are not many things which do "all-pervade the body" fixed upon the "all-pervading blood," rather than the "all-pervading connective tissue," as the medium of the supposed "virus," merely, as he said, "because at any rate we can then hold to our study by some sort of analogy with things that we recognise as blood diseases." If the theory was

[1] The paragraphs in smaller type were those which time would not allow the lecturer to read.

correct cancer should commence, not as a solitary tumour, but as a general carcinomatosis or sarcomatosis.

But these "lost balance theories" have to meet the further difficulty that carcinoma is continually progressing laterally as well as downwards by, as it is commonly stated, "the irregular and rebellious growth of the neighbouring epithelium." So that the disease does not consist, as these theories imply, merely in an invasion of the weaker by the stronger tissue, but there is likewise a retrograde and subversive metamorphosis produced in the stronger by the stronger—i.e., in the epithelium by the epithelium. Foulerton by substituting chronic inflammation and irritation for senility as the cause of the epithelium transgressing the limits of the basement membrane (and therefore of the loss of normal balance between the epithelium and the connective tissue) escapes some of the arguments against the constitutional theory; but he does not explain why it is that chronic irritation causes carcinoma in some cases and not in others, and in some parts of an individual but not in other parts which have been similarly and equally irritated; nor does he explain the origin of carcinoma where there has been neither traumatism nor chronic irritation.

Woods Hutchinson, by assigning the origin of cancer to a matrix of mature cells, which cells after becoming "detached" by a process of destructive elimination, revert to their ancestral or embryonic type, is to some degree open to the same objections by holding that whole organs, such as the uterus and mamma, are thus detached from the rest of the organism. Why, for instance, if this theory is correct, do we not frequently meet with multiple primary carcinomata in the female breast? Why, in the uterus do we not commonly find multiple primary carcinomata—one or more malignant neoplasms in the fundus, one or more in the cervix uteri, each one corresponding in structure with the glands of the part of the organ in which the neoplasm has arisen?

There are other entogenous theories as to which I cannot do more than just barely allude. Mr. Jonathan Hutchinson, for example, considers now, as formerly (see Glasgow debate), cancer as simply "a modification of the inflammatory process, which again in its turn is only a modification of that of normal nutrition"; he regards the causes which give proclivity to all malignant new growths as nearly identical, the chief of them being senility, chronic inflammation, and local irritation, and thinks that every human being, nay, every organism possessing tissues capable of inflammatory change, is liable to the different forms of cancerous disease. The late Mr. John Marshall, who delivered the third Morton lecture, and Dr. J. Inglis Parsons have advanced the theory that cancers, and, indeed, all tumours, "are in the first instance composed of cells formed in the normal process of repair, but that, having escaped from the control of the nervous system, they take on an independent life and continue to proliferate and develop without check just as all living cells are capable of doing *ad infinitum* under favourable conditions."[2] Mr. H. L. Lack's theory was that carcinoma formation is due to the migration of normal epithelium, by means of the lymphatics, to various parts and organs where the cells lodge and proliferate indefinitely. One of his experiments, and only one, seemed to support this view—and no similar or corroborating result has ever since been obtained. Dr. Jules Félix and Dr. Robert Bell have each laid great stress in recent works on the sinister influence of uric acid and the gouty diathesis in promoting the condition of the tissues which enables cancer to develop.

I must pass now to a brief consideration of the ectogenous group of conjectural causes. These are: (1) the various forms of injury, chronic irritation, and chronic inflammation, &c.; and (2) micro-organisms. Great importance has been attached by Virchow and many others to chronic irritation as a causative factor in cancer; and it is certainly needful for us all to bear in mind the pernicious rôle played by the clay pipe, the carious tooth, and many and various agencies of the kind in provoking the development of cancer. But not one of them can take rank as the essential and unconditional cause of malignant disease; that is, as the factor, without which cancerous diseases cannot arise, though they are unquestionably amongst the agents which excite the real factor of tumour formation into activity, and as such they must be referred to again in connexion with the "tumour germ" theory.

## THE MICROBIC THEORIES.

The theory of the microbic origin of cancer still occupies the very forefront of cancer research. There are not wanting, however, indications that it is on the wane and that it may soon come to be described, as indeed Hansemann in his recent work has already spoken of it, as "belonging to history." The search for a specific micro-organism of cancer dates back to the early days of modern bacteriology. As soon as tuberculosis was removed from the list of diseases due to a so-called diathesis, by the discovery in 1882 of the bacillus tuberculosis, a very large number of scientific workers made it their aim to demonstrate, if possible, the existence of a corresponding micro organism as the causative agent of carcinoma and sarcoma. Nedopil in a memoir published in 1883 was the first to sustain with conviction the microbic origin of cancer. No sign of a specific cancer organism had, however, at that time been demonstrated. But research soon led to the alleged discovery by different experimental workers of three classes of living agents—namely, bacteria, protozoa, and saccharomycetes and blastomycetes, or yeast fungi

*The bacterial or schizomycetic theory.*—Bacteria were the first organisms which were thought to be the cause of cancer. Nepveu as far back as 1872 had found them in carcinoma, and Rappin is said to have actually isolated a diplococcus both from epithelioma and sarcoma in 1886. During 1887 there appeared a number of writings by different investigators who claimed to have discovered—either in cancerous tumours, or in the blood of cancerous persons—the microbe of cancer, and to have isolated and cultivated it; and by means of inoculation of the fluid culture to have obtained the reproduction of the disease in animals. Scheuerlen claimed to have isolated and cultivated a special bacterium from carcinoma. Francke described a bacillus of sarcoma which he differentiated from the bacterium found by Scheuerlen in carcinoma. Schill stated that he had successfully cultivated a bacterium from both carcinoma and sarcoma. Others subsequently made similar claims; whilst, on the other hand, several eminent observers were arriving at the conclusion that many of the supposed micro-organisms were the factitious products of faulty technique; and that such micro-organisms as had been actually discovered played but a very subordinate rôle, if any, in the evolution of malignant tumours.

*The protozoic or psorospermic theory.*—Before the year 1884 attention had scarcely at all been directed to the presence of sporozoa in human pathology, but between that date and 1891 coccidia—a group of parasites belonging to this class of protozoa—were found in a variety of the organs of man, especially in the pleura, the intestinal epithelium, the liver, and the ureter, as well as in the mucus from the air passages of persons suffering from whooping-cough. In 1889 and the following year a number of descriptions were given by several observers of coccidia-like bodies having a great resemblance to the coccidium of the liver of rabbits which they had discovered in carcinoma of the skin, jaw, intestine, stomach, nipple and breast, prostate and bladder, and other parts. These bodies were found both in the nucleus and protoplasm of cancer cells. In 1901 appeared Schueller's monograph with the description of the round or oval yellowish-grey or yellowish-brown protozoa of cancer, showing radiating striæ or cilia in their structure, which he had discovered. In 1891-92 Ruffer found and described bodies which he regarded as psorosperms in the protoplasm of carcinoma cells. In the same and the following years other workers described similar results. In 1901 Gaylord published an account of certain spherical bodies alleged by him to be cancer organisms, and von Leyden described a protozoal organism in the form of motile cells. In a work just published Dr. Ludwig Feinberg strongly argues for the animal nature of the cancer parasite, to which he gives the name "histosporidium carcinomatosum." On the other hand, many observers have asserted that all these alleged cancer organisms are not psorosperms but the products of cell degeneration, or cell inclusions of leucocytes or red blood discs, or are the result of irregular forms of indirect division of epithelial cells; and Ribbert brought forward, amongst other objections, his ingenious and telling argument of "symbiosis," against the validity of the microbic origin of cancer.

*The blastomycetic theory.*—The theory that carcinoma is due to infection by a vegetable parasite belonging to the blastomycetes or yeast fungi was first promulgated by W. Russell in 1890. Russell found certain small round bodies within the cells of carcinoma, which retained the fuchsin stain after sections of carcinomatous tumours had been treated with carbol fuchsin, then decolourised with alcohol, and finally counter-stained with iodine green. These "fuchsin bodies" he regarded as yeast-like or "sprouting fungi." Prior to Russell's paper the yeasts had been considered as wanting in any pathogenic effect, but within a few years after, cases of yeast infection in man resulting in the formation of granulomata, but not of malignant new growths, came to be recorded. The blastomycetic theory of the origin of cancer has been since pursued chiefly by Sanfelice and Roncali who not only confirmed Russell's views but have gone much further. Plimmer who was previously a strong supporter of the protozoic theory and had, like Soudakewitch, Metchnikoff, Ruffer, and others, described the cancer bodies as protozoa, became a convert to the views of Russell, Sanfelice, and Roncali, whilst Sawtschenko, who was also converted, has recently described as representing yeasts the same figures which he had formerly described as representing protozoa.

As in the case of bacteria and psorosperms, so with the yeasts alleged to have been found in cancers, their nature is

[2] J. Inglis Parsons: Brit. Med. Jour., April 27th, 1889.

disputed by many observers. The "fuchsin bodies" of Russell were regarded by Cazin and Duplay as a certain form of cell degeneration (*globes hyalines*); by Nepveu as being derived from changes in the nuclei of leucocytes or in red blood corpuscles; or still oftener from the endothelial cells of the lymphatics; and by others they were considered to be due to degeneration of protoplasm or to atypical mitosis and phagocytosis; whilst Foulerton and Price Jones have pointed out three possible sources of fallacy as to the presence of yeasts in cultures obtained from malignant new growths, the chief of the three being contamination owing to the presence of yeasts or torulæ in the air of the laboratory.

*The failure of the microbic theories.*—From a careful examination of the evidence for and against the bacterial or blastomycetic nature of cancer causation it is obvious that neither the alleged bacterial or yeast "cancer bodies" comply with Koch's main postulates nor with the requirement of the recent discovery that a parasite tried against the serum of a patient supposed to be infected by the same kind of parasite causes an "agglutinative" reaction in the serum. In reference to the protozoic theory the difficulty of proof or disproof is much greater than in the case of vegetable parasites because the vegetable organisms are easy of growth on artificial media. One of the weak points, however, of the psorospermic theory of cancer lies in the complete absence of unmistakeable forms of reproduction of the alleged organisms in the interior of a malignant tumour, the rate of growth of which tumour should be proportionate to the activity of the multiplication of the organisms, if these supposed organisms are indeed the essential cause of the formation of the cancerous neoplasms. Apart from the fact that there has been a want of success in cultivating and inoculating these conjectural organisms, the protozoic nature of the cancer bodies has not been in any way satisfactorily proved; and even granting that the alleged organisms are protozoa, there is no evidence to show they are the cause of cancer—of either carcinoma or sarcoma.

In short, neither fission fungus, yeast fungus, nor psorosperm—neither bacterium, blastomycete, nor protozoon—has up to the present moment been satisfactorily shown, in spite of years of patient study by many skilled workers, to be in any sort of causal relationship to these diseases. How different was the case of the tubercle bacillus! When Koch announced his great discovery he was able to bring forward such overwhelming proof of the correctness of his claim that with few exceptions the most sceptical were forthwith convinced.

## THE TRANSMISSION OF CANCER BY GRAFTING AND DIRECT INOCULATION.

Some of the results of grafting and direct inoculation have often been evoked in support of the microbic theories of cancer genesis, though upon very inadequate grounds. For more than a century experiments have been resorted to with the object of testing: (1) whether cancer can be transmitted from man to animals, or from one animal to another of a different species; (2) whether cancer is communicable from man to man, or from one animal to another of the same species; and (3) whether one part of a cancerous individual can be inoculated from another part which itself is the seat of cancer. Clinical observations have also been directed to the solution of some of these questions.

Reference may be made to Cazin [3] for the earlier, and to Behla's lecture on "Cancer à deux," delivered before the Berlin Cancer Committee on April 3rd, 1901, for the most recent information on the second of these questions. Macewen in his speech at the Glasgow debate and De Bovis in a recent article in *La Semaine Médicale* [4] have also quoted several cases of the alleged communication of carcinoma from man to man; and my friend and former house surgeon, Mr. W. G. Nash of Bedford, has collected five cases of supposed communication of cancer of the tongue and lip from man to man. Morau's observations seem to prove that cancer was communicated from mice to mice by means of bugs.

Many of the cases in man were instances of what is called "conjugal cancer"; and in these, as well as in the cases other than of the genital organs, the cancer was doubtless excited by chronic or repeated irritation and not communicated by the transmission from one person to the other of the carcinoma cells.

Several instances of auto-inoculation were quoted by the speakers in the London and Glasgow debates.

Hahn succeeded in grafting carcinoma and Cornil sarcoma from one part of a human being with incurable disease to another part of the same patient's body. Some experiments by Morau are of great importance, because they were the first which were made in a systematic manner to show the transmissibility of a malignant new growth from one animal to another of the same species.[5] Quite recently Jensen and Borrel have had successful series of inoculations and graftings in white mice.[6] Jensen[7] had a series of eight and Borrel of six successes.

None of the results of the experiments and none of the clinical cases just alluded to, however, give satisfactory support to the microbic theories; nor do they explain the specific capacity of the cells which enables them to grow and to multiply on new soil.

In the instances in which carcinoma has been developed the results have been due to the irritation excited by the tissue grafting, or to auto-inoculation or implantation of the carcinomatous cells, and not to transmission of the disease through the agency of a micro-organism. It can easily be understood how the cells themselves are able to live and to multiply in places upon which they are engrafted, or to which they accidentally gain access, without presupposing the presence of any microbic cause. The local, regional, and general dissemination of carcinoma, endothelioma, and spindle-celled sarcoma are explained by cell metastasis, cell transplantation, cell migration, and the proved amœboid movements of cancer cells into and along lymphatics, blood-vessels, and the connective tissue spaces. This was very distinctly insisted upon by Arnott at the London cancer debate. Carcinoma and sarcoma have not the general characters of a disease caused by micro-organisms. When microbes act upon mature connective tissue the tissue proliferates and forms granulation material.

The tumour products of microbic infection are the so-called granulomata formed out of the corpuscular elements of the blood, and the proliferation products of pre-existing tissue; they are the results of a chronic inflammatory process, and all the tumours caused by the same kind of microbe are structurally the same, no matter in what part or organ they originate or develop. Not so the tumours of carcinoma and sarcoma. In endothelioma and spindle-celled sarcoma the cells of the secondary tumours are, as in carcinoma, histologically identical with the cells of the primary neoplasm. It is only in round-celled sarcoma that we cannot be sure whether the cells of the secondary growths are derived from the cells of the primary tumour or from the tissue in which the secondary growths occur. The round-celled sarcoma more closely resembles the chronic inflammatory processes than does spindle-celled sarcoma, and still more so than does carcinoma.

The primary tumour of carcinoma varies in structure according to its location and to the type of epithelial cell which is normal to the part affected. The secondary tumours are also composed of epithelium which has the same form and the same arrangement as that of the primary tumour; and the secondary tumours have, moreover, all the same delicacy of construction as to stroma, blood-vessels, and lymphatics, as well as other points of similarity with the primary tumour. All this was strikingly, if quaintly, put by Moxon at the London cancer debate when he remarked, "You find that rectum cancer is rectum tissue ..... whose structure is that of the Lieberkühn follicles of the mucous membrane of the gut"; and as to the metastatic growths you do not "find rectum cancer in the rectum and liver cancer in the liver. But instead of that I have repeatedly seen rectum in the liver." Coats in the Glasgow debate told how the delicate structure of the blood-vessels which had led to fatal hæmorrhage from a primary growth was repeated in the secondary growths in the form of extensive extravasations of blood throughout the tumours. Stewart has recorded a case in which growths in the liver and lung secondary to carcinoma of the pancreas, besides having the racemous glandular structure of the primary tumour of the pancreas, had also a chemical resemblance, for upon analysis the secondary growths were proved to contain a high percentage of trypsin.

The definite establishment of these facts has proved that the secondary growths are produced by the migration of cells from the primary seat; that the development of these growths is solely by the multiplication of their own cells, and that there is no transition of the parenchyma of the part invaded into the tissue of the carcinoma. So with reference to sarcoma. The typical sarcomatous tumour element is the connective tissue cell and the secondary tumours resemble the primary in every respect.

As in carcinoma so in sarcoma the pre-existing connective tissue serves as a temporary framework or stroma which is later removed and replaced by the fibrillation of the cells of the tumour. What look like normal glandular cells undergoing a transitional process into carcinomatous tissue have been shown to be in reality the results of irritation and not the precursors of carcinomatous cells.

Thus are annihilated the theories of Rindfleisch and of Virchow, and

[3] Archives Générales de Médecine, June, 1892.
[4] La Semaine Médicale, Sept. 24th, 1902.
[5] Morau: Archives de Médecine Experimentale 1894.
[6] Annales de l'Institut Pasteur, Janvier, 1903.
[7] For still later report by Jensen see Centralblätt für Bakteriologie, June, 1903. Jensen's work extends over two and a half years and concerns 19 generations.

every other theory which predicates that carcinomatous new growths are produced from anything else than epithelial cells, or that they are the result of changes in the pre existing mature cells, of the part or organ affected. Rindfleisch's theory, adopted also by Gussenbauer, while it grants the epithelial origin of the carcinomatous cells, attributes the local extension of the disease to a "spermatic influence" of these cells upon the adjacent connective tissue cells, as well as upon the neighbouring epithelium, and ascribes to them the power of converting the connective tissue cells into epithelial elements.

The theory of Virchow was that carcinomatous cells are derived from connective tissue cells and that carcinomatous tumours are primarily connective tissue growths. Other theories attribute the original focus and the local extension to retrograde changes in mature cells, either as the result of "over nutrition of the cells" (Maylard) or of atrophy and "reversion to their ancestral type from being worsted in the struggle for existence" (Woods Hutchinson), or of senile decay (Thiersch), or of inflammation, chronic irritation, or injury. Nor is the theory of Loeb that the penetration and migration powers of carcinoma are due to the dissolving effect of some ferment, probably allied to trypsin and secreted by the cancer cells, at all necessary to explain the general pathological anatomy of either carcinoma, endothelioma, or sarcoma. Considering the inherent capacity of a cancer cell (as of every primitive cell) for rapid breeding and self-maintenance, for abundantly proliferating in any part of the body to which it migrates, the wonder is that cancer is not readily transmissible from one subject to another. Instead of that, transplantation and direct inoculation of cancer from man to animals or from animals to animals have hitherto almost invariably failed. But had it been otherwise the success would not in itself have furnished the slightest proof that cancer genesis is due to a microbe, unless Koch's postulates had been complied with. In the successful transplantations and inoculations quoted by Cazin none of the experiments were controlled by trying if the resulting tumours could be reproduced in series in fresh experimental animals. Even in more recent experiments, with the exception of the few instances referred to above, this requirement has not been fulfilled.

From nothing that we know up to the present time of the action of micro-organisms can the microbic theory throw the least light upon the cases of alleged transplantation and direct inoculation of cancer from one person to another. How can we on the microbic theory explain a glandular-celled carcinoma producing in another person a squamous-celled carcinoma, or a squamous-celled carcinoma of the tongue giving rise to a spheroidal-celled carcinoma of the mamma or to a columnar-celled carcinoma of the stomach or rectum? Such alleged cases are at total variance with what occurs in auto-inoculation and with all the knowledge we have of the local, regional, and general infection of cancer, as well as with our experience of the action of microbes upon living tissues.

While transplantation and direct inoculation, as well as contagion, of cancer from person to person stand so far absolutely unproved, auto-inoculation, on the other hand, undoubtedly occurs and cases have been reported by de Morgan, Sir W. Jenner, and others. An ulcerated carcinoma frequently rubbed against or continually in contact with a cracked, excoriated, or abraded surface finds a favourable soil therein for the development of any of its cells which are deposited there. Sarcoma, in the same way, may be inoculated. This occurred in a man, aged 62 years, under my care. He had a mixed celled sarcoma of a diverticulum of the bladder. On post-mortem examination this growth had caused a local infection, by direct implantation, with the result that a similar growth had formed on the opposite wall of the bladder. But in auto-inoculation just the same sort of process goes on as is witnessed in a lymphatic gland when the carcinoma cells have migrated to it from the primary tumour. It is simply "a metastasis of epithelial cells," as Klebs has described it.

Auto inoculation is strictly comparable to, if not identical with, the recognised mode of regional and metastatic infection of carcinoma and is as unlike microbic infection as those processes are admitted to be.

## THE "TUMOUR GERM THEORY"—COHNHEIM'S THEORY.

There is one theory which is more consistent than any other with all that we know about malignant diseases, which fully explains the origin of very many non-malignant tumours, and is, I believe, destined to be accepted as the true explanation of the genesis of malignant new growths. It is the theory which was put forth by Durante of Rome about the year 1874 and a year or two later by Cohnheim (1877).

Thiersch, Ecker, Mayo, Lebert, Billroth, Klebs, Rindfleisch, and others had said that carcinoma is the result of the proliferation of pre existing mature epithelium, thus breaking away from the doctrine of Virchow, Rokitansky, Forster, Cornil and Ranvier, and others who considered carcinoma cells to be metaplastic products of the connective tissue.

Cohnheim went a step further and referred the origin of carcinoma to the proliferation not of mature but of *embryonic* epithelial cells. He taught that all tumours originate from a matrix of embryonic cells which during fœtal life are cut off from their proper connexions, remain in an undeveloped state, are surrounded by developing and ultimately developed tissues, and thus become, so to speak, "embryonic inclusions." According to Cohnheim these groups of cells, or "tumour germs," are portions of the germinal layers which, through not being utilised in the growth of the embryo, or by becoming displaced from their proper relations during the process of cell differentiation in the embryo, remain in a quiescent or latent state until excited into activity by one or other of several causes at some indefinite period after birth.

Cohnheim insisted that a tumour never had its origin directly or indirectly from mature tissue. And herein lay the difference between Durante and Cohnheim, for whilst the latter regarded the matrix of embryonic cells or "tumour germ" as always of congenital origin, Durante thought that the elements from which arise all neoplasms, and especially the malignant, are either those "which have preserved in the adult organism their embryonic anatomical characters, or which *have acquired them again through weakening of their chemical and physiological activity.*" Obviously Cohnheim's doctrine is insufficient by itself to explain the formation of malignant new growths in scar tissue, in immature callus, in unabsorbed inflammatory products, and in parts after injuries and operations of various kinds. This deficiency is met by extending the theory so as to include groups of cells which become isolated beyond their own natural boundaries by post-natal processes. Nicoladoni in 1881, in a paper on "Epithelioma in Sequestrated Wounds" (*"les plaies à séquestre"*), attributed the origin of these new growths to shreds of skin which had become displaced into fistulous tracks and had there proliferated under the stimulus of an accidental inflammation of the part or of an operation. Ribbert has indicated the possibility, during an inflammatory process, of a group of newly formed epithelial cells becoming completely detached from their natural parent tissue; and of the cell or cells so withdrawn from the control and growth-regulating influence of normally surrounding cells, assuming an exalted independence and power of proliferation whereby a tumour becomes developed. He also recognises that a fragment of sequestrated tissue detached by trauma of any sort may in the same way become a "tumour germ."

It was to meet this deficiency of the Cohnheim theory that Senn added to it this corollary: "The tumour matrix may be composed of embryonic cells, *the offspring of mature cells, which have failed to undergo transformation* into higher tissue, and which may remain in a latent, immature state for an indefinite period of time, to become under heredity or acquired exciting causes the essential starting point of a tumour." Senn expresses this extension of the "tumour germ" theory in his definition of a tumour thus: "A tumour is a localised increase of tissue, the product of tissue proliferation of embryonic cells of congenital or post-natal origin, produced independently of microbic cause" We thus see how Durante, Nicoladoni, Ribbert, and Senn embrace and supplement the incomplete theory of Cohnheim by recognising a post-natal origin of a cell matrix.

By these theories metamorphosed mature cells, as well as pathological microbes, are excluded as etiological factors in tumour formation, and a well-defined line marks off malignant and simple tumours alike from the inflammatory swellings, or granulomata, which are the products of the action of micro-organisms. If it can be proved that epithelial and connective tissue cells can be displaced as well as isolated, after birth as well as during the development of the embryo, we can understand how carcinoma may spring up not only in parts where epithelium normally exists but also as a primary growth in bones, lymphatic glands, or other mesoblastic structures and organs. Primary carcinoma may also take origin, in situations unusual for epithelial new growths, from a vestigial structure, a rest, or an accessory organ. But if all kinds of tumours arise from congenital or post-natal matrices of embryonic tissue, what is it which determines that such a matrix shall in one case develop into an innocent and in another into a malignant new growth? The answer is that the simple or malign nature of the tumour depends partly on the stage of differentiation of the cells of the matrix at the time when they are arrested and isolated and partly upon the degree of feebleness of the so-called physiological resistance of the surrounding or adjacent tissues. If the cell growth is arrested near the completion of the process of differentiation and the resulting matrix consists of epithelial cells the tumour will be an adenoma or a papilloma; if the arrest of the development of the same cells takes place at an earlier stage the tumour would be a carcinoma. The same applies to sarcoma and the benign connective tissue tumours. The nature of the tumour thus depends upon the embryonic layer from which a matrix is derived and upon the stage of cell differentiation at the time when the cell growth is arrested.

I propose now to examine, as well as the time will permit, the evidence in favour of the separate parts of "the tumour germ theory"—namely, (1) the existence of congenital matrices of embryonic cells; (2) the existence of matrices of post-natal formation; (3) the continuance of these matrices for a time in a dormant state; and (4) the causes which arouse the matrices into activity.

1. What proof do we possess of the existence of congenital matrices of embryonic cells? It is hardly necessary to enumerate the many instances of "vestiges" and "fœtal

rests" which are found in the human body, as they now form a brief chapter in the latest text-books on anatomy. Tracts of embryonic epithelium are well known to occur in the tongue, gums, face, scalp, neck, brain, eye, testicle, broad ligament, ovary, and along the lines of coalescence of the trunk.

Many matrices are derived, we know, from portions of embryonic skin becoming buried in the mesoblast in the process of closure. According to Ebstein it is not uncommon to find in newly born infants isolated pearls of epithelial cells buried in the connective tissue by inclusion. Hexhl looked upon subcutaneous atheroma as the product of tissue-proliferation from such an island of epithelial tissue or portion of epidermis with perhaps a single hair. Rests of connective tissue occur as islets of cartilage in the neighbourhood of the epiphysial lines of long bones, especially in rickety subjects. Matrices of embryonic tissue may be met with in normal situations for such tissue or in abnormal; when in abnormal the matrix is said to be "misplaced." Bodies identical in structure with the suprarenal gland are found not only in connexion with the capsule, the cortex and the hilum of the kidney, and in the perinephric tissue, but also beneath the capsule of the liver, in the broad ligaments of a fœtal uterus, in the inguinal canal, and in some fatty tumours of the spermatic cord. That they have not more frequently been met with than is the case is probably due to the fact that they have not been looked for, and Bayard Holmes states that remnants of the adrenal body can be discovered in various parts of the genito-urinary tract in 90 per cent. of all post-mortem examinations.

Collections of embryonic tubules have been discovered in the renal capsules of a great number of fœtuses. They probably represent aberrant convoluted tubes which have failed to come into relationship with the glomeruli of the renal parenchyma. The occurrence of additional thyroids, additional teats, and additional mammæ is by no means uncommon. The percentage of cases of additional mammary structures varies in different districts from ½ to 30 per cent.[8] In many mammals the mammary glands are developed as thickened ridges of epithelium extending from the axillæ to the groins. Subsequently the ridges are broken up into separate patches, each of which is capable of development into a distinct gland. Though such embryonic ridges have not yet been described in the human embryo, yet it has been shown that along a line running from the axilla to the groin, on each side, ten mammary glands may be found in the human subject, and of these the normal gland is the sixth. In addition to the accessory mammary organs which appear along the lines indicated others are occasionally found on the thigh, the shoulder, the neck, and the cheek. They are most probably developed by the abnormal modifications of cutaneous glands, for all mammary glands are merely modified sebaceous glands.

Roux discovered isolated columns of cells in the inner embryonic layer of frogs' embryos; once he saw as many as 13.

For many other instances of vestigial and abnormal structures reference may be made to Professor Arthur Robinson's article in Morris's "Treatise on Anatomy." Dr. John Beard in a lecture on the Embryological Aspects and Etiology of Cancer[9] states that in elasmobranch fishes (and he implies that the same conditions exist in man) a considerable percentage of the primary germ cells fail to reach their normal position, the germinal ridge; that many of these vagrant germ cells degenerate and disappear, but all do not; and that the common situations for the origin of cancer are the very ones in which vagrant germ cells are usually met with.

2. The occurrence of matrices of embryonic tissue of post-natal origin is capable of completely satisfactory explanation. Leo Loeb[10] has described how in the healing of a superficial wound the epithelium of the skin on either side of the wound was seen to have fused itself into a cell mass which sent off branches not only across the wound but down into the blood clot and the connective tissue, especially if the connective tissue had been injured, and these branches of the cell mass even burrowed through cartilage. It is intelligible enough, therefore, how in the cicatrisation of ulcers and wounds generally some of the epithelial buds become "isolated," and being thus shut off from their proper anatomical relations and from their normal function may, under suitable stimulation, develop into carcinoma. Epithelial cells not utilised in the process of epidermisation and becoming buried in the scar tissue may when brought under the influence of the needful exciting cause give rise to carcinoma. This sequestration of unused cells may occur during healing after burns, chronic ulcers, lupoid and syphilitic sores, fissures, sinuses, fistulæ, compound fractures, cracked lips, the excoriations from soot, tar, or paraffin, and after lacerations and ulcerations of the cervix uteri; also after the alternate breaking down and healing in such diseases as ichthyosis of the tongue, cheek, vulva, vagina, and after ulcers caused by carious teeth, as well as after wounds, whether operation wounds or otherwise.

In like manner a matrix may be produced from which sarcoma may arise. In parts which have been the seat of chronic inflammation and in scars, unspecialised connective tissue cells may be buried, and will be there ready to grow into a sarcoma under the influence of a sufficient exciting cause. Some of the embryonic cells during the process of repair of a fracture may fail to attain to the perfection of their parent cells and will thus remain in the part in a latent condition, like the congenital matrix of embryonic cells predicated by the original theory of Cohnheim.

3. What proof have we that a matrix of embryonic tissue, whether of congenital or post-natal origin, can remain for a length of time in a quiescent state and then suddenly start into active growth under the influence of some stimulus? This is actually witnessed in the growth and development of the teeth, the bones, the skin and its appendages, the larynx, the mammæ, and the organs of generation, the cells of which remain for years in a state of incomplete differentiation and then normally, under the physiological stimulus which occurs at puberty, take on rapid proliferation. Pathologically the same suddenly aroused activity is seen in certain epithelial tumours which are rarely noticed before puberty, such as dermoids, branchial cysts, and mammary adenomata. Rudimentary organs and accessory organs which hitherto as to growth had been stationary as well as functionless become the starting points of tumours, more especially at and after puberty.

Puberty is the time of life characterised by the highest degree of tissue activity, and it is at this time that a matrix of embryonic cells is prone to take on cell proliferation and to result in the formation of a tumour. If the cells composing the matrix are insufficiently endowed with the capacity of reproduction, or if they are never subjected to an adequate degree of stimulation they remain *permanently dormant*. Vestiges and rests lie dormant for years, often throughout life; but they are "tumour germs" all the same which under suitable conditions would undergo active cell proliferation and rapidly develop into tumours. The same latency, followed by activity of growth, is seen in those excesses of embryonic tissue which give rise to local or general hypertrophies or giant growths; the excess of the embryonic tissue is present at birth, though it may not take on activity until comparatively late in the life of the individual.

4. The causes which arouse a matrix into activity are numerous. For a matrix of embryonic cells to be transformed into a tumour it must be aroused into activity by some exciting agent. We must now inquire what these exciting agents are and in what relation the commonly ascribed causes of cancer stand to the "matrix" or "tumour germ" theory. The stimuli which arouse the cells of the dormant matrix to active proliferation are either general or local, congenital or acquired, and the chief amongst them are the alleged common causes of cancer. Let us consider four of them in some detail—namely, heredity, age, traumatism, and chronic irritation.

(*a*) *Heredity.*—A case like that of Friedreich, where a woman with carcinoma gave birth to a child affected with carcinoma, is altogether exceptional.

In a case in which I performed Cæsarean section on account of obstruction due to carcinoma of the cervix uteri and the vagina, both mother and child survived, the child being apparently quite healthy. Both were known to be alive many months later, the child being still quite well. Subsequently the child was lost sight of. There are possibly not a few of such cases and it would be well if in future the lives of these children could be followed.

Statistics hitherto have given insufficient and inaccurate information concerning the frequency with which the offspring of parents carcinomatous at the moment of conception or delivery have been affected with carcinoma. There is, however, no more reason to doubt that an aptitude is transmitted from parent to child for the development of carcinoma and sarcoma than for denying an hereditary disposition to various other diseases. This aptitude, or predisposition to malignant disease, has been appropriately described as "a diminution of the physiological resistance of the tissues" which permits of their being invaded and destroyed by the proliferating cells of the tumour matrix. In the great majority of cases (in Cohnheim's view in all cases) the matrix itself is of congenital origin, but though congenital, it may never be excited into activity. In others, the matrix is of post-natal origin, and if the necessary stimulus arises and the tissue resistance is weak cancer will occur, even in persons in whose family cancer had hitherto been absent.

In a sense, then, all tumours are congenital or hereditary, except such as are derived from a post-natal matrix, and even in these cases the matrix will not develop unless the normal physiological resistance of the tissues is weakened by some cause, which may be hereditary, but which, on the contrary, may not be so. For a tumour to be inherited there must be a congenital matrix of embryonic cells, or there must be transmitted from parent to offspring a lack of physiological resistance either of the whole of the tissues of the body, or at least of those adjacent to the matrix, whether the matrix be congenital or acquired. The exciting cause will in most cases be acquired, not inherited.

[8] A. Robinson: Morris's Anatomy, third edition.
[9] THE LANCET June 21st, 1902, p. 1760.
[10] Johns Hopkins Bulletin, January, 1898

If it be granted that there is a family tendency to vestiges, rests, or matrices of embryonic cells it is at once intelligible how such an hereditariness may lead to mammary carcinoma in one member, uterine carcinoma in another, squamous-celled carcinoma in another, and sarcoma in a fourth member of the same family.

(*b*) *Age.*—Carcinoma is admittedly a disease of middle-aged and elderly persons and of senile tissues or organs like the uterus and breast after the child-bearing age. But on the "tumour germ" theory there is no difficulty in explaining the occasional occurrence of carcinoma in very early life or at any period of life if the physiological resistance is especially weak in the individual and the matrix irritant or exciting cause is very considerable. Sarcoma occurs in much younger life than carcinoma and is most frequent in children and young adults, but no age is exempt from it.

There may be in the same person several congenital matrices, one or more of which may be of the epithelial type, one or more of the connective-tissue kind. During childhood and young adult life the exciting cause, or matrix stimulus, will start into activity a connective-tissue "tumour germ," but during mature life and in advanced age the same stimulus will arouse by preference a matrix of embryonic epithelial cells because the epithelium is more active and vigorous than the connective tissue at the later periods of life.

Assuming the presence of a matrix of each kind in the same individual and that middle life has been reached without the occurrence of any matrix-arousing stimulus but that after this period some *general* exciting cause comes into existence, the matrix of epithelial cells will most likely be the one to respond and a carcinoma, not a sarcoma, will result; but there may be the simultaneous appearance of different kinds of tumours. Should the stimulus be a *local*, not a general one, the matrix upon which alone it acts will be aroused and a carcinoma or a sarcoma will be developed according to the type of cells forming the matrix which is stimulated.

With advancing age, or senility of tissue, come impaired vitality and lessened power to resist the effects of injury, hence the diminution of the physiological resistance of the tissues and the increased proneness to the formation of cancer. Little is known, it must be admitted, of what this "physiological resistance" really consists; what this power is which holds in check altogether, or for a long time, the proliferating tendency or force of a tumour matrix, as it does for years the growth and development of the mammary glands, the organs of generation, the larynx, the teeth, and the beard. The existence of such a force was, however, demonstrated by Cohnheim and Maas who introduced pieces of young periosteum into the jugular veins of animals. The periosteum produced bone which was always limited in size to the lumen of the vessel in which the periosteum emboli s became impacted; the bone never extended beyond the vessel walls, a physiological resistance restricted it, no further growth ensued, and in time the ossified periosteal graft was absorbed. The same investigators showed that transplanted grafts of embryonal tissue succeed, whereas grafts of mature tissue are invariably removed by absorption in a short time. Embryonic tissue—fœtal cartilage, for example—taken from animals before they are born and engrafted into rabbits proliferated abundantly; grafts from benign tumours only grew to a very limited extent, if at all, and were then removed by absorption. Grafts of malignant tumours have almost, without exception, failed, though composed as they are of embryonic tissues. This seems to show that the physiological resistance to malignant cell proliferation is, happily, more effective than against fœtal embryonic tissues or against the embryonic tissue of benign tumours. The weakness or want of this physiological resistance, besides being sometimes inherited and often a consequence of age, can be acquired through injury, irritation, inflammation, and other pathological, general or local, causes.

(*c*) *Traumatism* is often said to cause malignant disease just as it used to be said to cause inflammation and suppuration. But just as no amount of injury will of itself excite suppuration without the presence of pathogenic and pyogenic organisms in the injured tissues, so no amount of injury will give rise to a tumour without the presence of a matrix of embryonic tissue of either congenital or post-natal origin. No so-called exciting cause will produce cancer or sarcoma in the absence of the "tumour germ" of epithelial cells or connective-tissue cells respectively. But given the presence of such a matrix then injury of any kind, irritation of any kind—mechanical, chemical, thermal, or microbic—may excite cancer formation both by arousing the matrix into activity and by diminishing the physiological resistance of the surrounding or adjacent tissues. Whether the cancer follows the injury quickly or tardily depends upon the intensity of its effects upon the matrix, or upon the degree to which the physiological resistance or, what is probably the same thing, the nutrition is affected, or upon both these conditions.

(*d*) *Prolonged irritation and inflammation* may (1) excite a matrix of congenital tissue to proliferate; (2) may diminish physiological resistance of the tissues around it; or (3) may provide a post-natal matrix of embryonic epithelial or connective-tissue cells and thus originate the essential factor of malignant disease as well as stimulate it into proliferative activity. Carcinoma of the breast following eczema of the nipple is an instance of malignant disease aroused by chronic irritation and inflammation. Epithelioma of the tongue following long-standing ichthyosis of that organ is another. They are typical illustrations of agents which act in each of the three ways just mentioned. Yet that neither of these pathological irritants is of itself the true and essential cause of carcinoma is proved by cases in my own practice. In 1880 I published two of the earliest reported cases of chronic eczema of the nipple (Paget's disease). Out of 305 cases of mammary diseases which up to that time I had seen in my hospital cancer out-patient practice, eczema of the nipple was met with in eight cases, in six of which there was no cancer present in the mammæ. In only two cases then out of eight did carcinoma of the breast follow the chronic eczema of the nipple and areola. It is certain, therefore, that something more than the long-standing irritation of chronic eczema is needful for the development of mammary cancer, and this something is a "tumour matrix" in the breast. If due to irritation alone, why did not carcinoma occur in all the eight cases equally?

If during a stage of cicatrisation of part of the eczematous area a local post-natal matrix had formed, the carcinoma, beginning as it might then have done in the skin, would have been a true squamous-celled epithelioma, not a glandular carcinoma. In one of these two cases there was a wart in close proximity to the eczematous areola, but though a wart is apt in certain circumstances to become an epithelioma, it was the breast, not the wart, we must assume, which contained the tumour matrix most readily provoked into riotous epithelial proliferation. It can hardly be maintained that the carcinoma was due to the prolonged irritation of the eczema upon a breast in which the senility of the organ had very specially diminished physiological resistance (or the "tissue tension") of the part, because one of the women referred to was hardly 30 years old and the other was only just 40 years of age.

Ichthyosis of the mucous membrane affords similar proof against the sufficiency of chronic irritation *per se* to excite carcinoma. In 1883 I published a paper on Ichthyosis and Epithelioma of the Tongue. In 13 out of 36 cases of epithelioma of the tongue ichthyosis of the tongue had been a precursor of the carcinoma. In 11 cases of ichthyosis of the tongue and three cases of ichthyosis of the buccal and labial mucous membrane (14 in all) carcinoma did not occur. The inference from these cases also is that in the 13 cases in which carcinoma supervened there was in the corium, or submucous structures, a matrix of embryonic epithelial cells which was stimulated into malignant growth by the long-standing ichthyosis. In the 14 cases in which carcinoma did not supervene the presumption is either that there was no matrix, or that the exciting cause was inadequate to arouse the matrix into activity, or that the physiological resistance of the surrounding tissue was sufficient to prevent its growth.

If it be granted that for cancer to form a matrix must exist and that without such a matrix no irritation, however prolonged, can cause the formation of a malignant new growth, we can at once explain how it is that a carcinoma does sometimes originate near a lupoid or syphilitic sore not in it, near an ichthyotic patch not in it, near an ulcerated nipple and areola not in them. A tumour matrix within the limits of an inflammation receives an increased blood-supply and this of itself is an incitement to active cell proliferation. Friedländer has shown by experiments that inflammation diminishes physiological resistance; so that persons born with, or acquiring after birth, a tumour matrix are more likely to become the subjects of malignant disease if the adjacent structures become the seat of inflammation or irritation; whereas without such a pathological irritant and the consequent loss of power of resistance of the neighbouring tissues the tumour matrix might remain latent throughout life. Carcinoma undoubtedly attacks parts and organs that are frequently the seat of prolonged and repeated irritation.

It is unnecessary to dwell on the several other alleged causative factors of cancer. Sex, race, climate, soil, food, locality, mental worry, and so on can under the "tumour germ" theory be nothing more than secondary or subordinate agents, acting either by way of stimulating a pre-existing matrix or by diminishing the physiological resistance of the structures, or both. To what extent they have the power of doing either we do not know and we must await the compilation of more accurate statistics than have hitherto been made.

5. The validity of the premisses of the "tumour germ" or "matrix" theory being assured, let us see whether the conclusion to which the theory leads can be established by actual facts. This conclusion is that cancerous as well as benign tumours spring from "inclusion masses"—some of which are "displaced" masses—of embryonic cells either of congenital or post-natal origin. A large variety of benign tumours which are well known to arise from congenital matrices might be quoted.

When Durante and Cohnheim published their theories they did not set them forth as pure hypotheses, entirely unsupported by facts, as we are led to suppose they did by the statements of some of the more recent authors on tumours. On the contrary, anyone who is familiar with Cohnheim's masterly chapter must have been struck with admiration at the vast knowledge and the great number of facts which he was able to adduce in support of his views. Undoubtedly, however, since that time a very great mass of information, in further corroboration of the correctness of his teaching, has been collected—thanks to the new stimulus to the study of embryology and neoplasms which his teaching supplied.

(*a*) We now know that accessory spleens, accessory ovaries, accessory thyroids, accessory suprarenals, accessory mammæ and outlying portions of the mammary gland, and remains of the Wolffian body are all responsible for tumour formations. All that is known of teratomata—endogenous and exogenous—lends support to the Cohnheim theory. All endogenous teratomata or teratoid tumours, including branchial cysts, and the simplest as well as the most complex forms of dermoids, undoubtedly arise from congenital embryonic matrices. Skin dermoids are the most frequent form of fœtal inclusions and consist of portions of embryonal skin isolated and buried in mesoblastic tissues; dermoids which contain mucous membrane are derived from a matrix of hypoblastic origin; whilst dermoids with complicated contents, such as bone, cartilage, and portions of organs, can originate only from a displaced matrix representing different tissues and organs. Or, conversely stated, matrices of epiblastic, hypoblastic, and of complex origin misplaced into abnormal situations are known to give rise respectively to dermoids containing sebaceous material and hair, to mucus, and to complex dermoids like those of the testis, the ovary, and other organs. Branchial cysts are derived from the remnants of branchial clefts and these remnants, like the "inclusion" matrices of dermoids, may remain dormant for an indefinite time or become the seat of tissue growth through the increased physiological function which commences at puberty or at any subsequent time on being stimulated by some extrinsic exciting cause. Rests of the kidney itself and rests of the suprarenal capsule are now known to be the starting points of certain benign and malignant renal tumours; and similar rests, and also remains of the Wolffian body, are the source of origin of certain paranephric tumours. Grawitz traced tumours of the kidney to islets of separated and displaced renal tissue. Outlying portions of the mammary gland are the possible source of those adenomata which are occasionally found at the margin of the breast. If remnants of a glandular structure resembling the mamma are recognised, as they now are, as occurring outside and also within the limits of the organ, is it not most probable that similar isolated or sequestrated portions occur within the capsule of the other glands and will be met with when they come to be more carefully sought for? Indeed, the view is at present held that such sequestrated and encapsuled portions of the glands are the source of fibro-adenomata, adenomata and small cystic tumours found in the liver, parotid, kidney, and other organs, as well as in the mammary glands.

By far the larger number of cartilaginous tumours appear near the epiphysial lines of the long bones where it is common for islands of embryonal cartilage to persist embedded in the bone tissue. Odontomes are believed to be due to misplaced and isolated buds or islands of embryonic tissue. The vast majority of angeiomata and lymphangeiomata are now regarded as survivals of the embryonic vascular and lymphatic structures respectively and, as such, unquestionably give support to Cohnheim's theory; so also do nævi which are now recognised as areas of persistent embryonic skin with its abundance of blood vessels and pigment.

Adenoma of the ovary, according to Waldeyer and Klebs, in the majority of cases starts from an embryonic tubular matrix of Pflüger's ducts. In the ovary of the embryo tubular structures not utilised in the formation of the Graafian follicles remain as fœtal rests and may later give rise to large adenomatous cysts. The large cysts of the ovary are not "retention cysts," as formerly believed, but are developed from "tumour germs."

Encapsuled uterine myomata are almost certainly sequestrated portions of uterine tissue. Cohnheim, indeed, describes the uterus as possessing "germinal material which only awaits a physiological stimulus to actually grow" and this being so "the probability is great that this germinal material will sometimes develop in the absence of physiological stimulation and then, of course, irregularly and atypically." This accords, he thinks, "with the facts that uterine myomata never develop till after puberty and have a special predilection for elderly spinsters, which," he maintains, "is certainly the case, and so," he says, "will the pathological anatomist, despite the denial of some practical gynæcologists." The so-called hypertrophies of the prostate, which are in reality adenomyomata—true tumours composed partly of glandular but in greater part of muscular tissue—are developed in a locality where the embryological processes are complicated to a high degree—viz., at the points of entrance of Müller's ducts into the sinus urogenitalis. What more likely, then, than that superfluous muscular or glandular cell groups should be sequestrated into tumour germs during the development of the prostate.

(*b*) There is no lack of evidence, either, that tumours are formed from matrices of post-natal origin. We know that tumour germs arise as the outcome of surface epithelium, hair follicles, or portions of skin forced into the deeper tissues by punctured and other wounds. From such sequestrated fragments of tissue "implantation cysts" are formed—a group of small tumours allied in character to the sequestration dermoids derived from matrices of congenital origin. These "implantation cysts" when occurring on the fingers are known as "digital dermoids." Others following lacerated wounds have been met with on the scalp containing hair and sebaceous material. Cysts of the iris following mechanical injury have been found to contain sebaceous matter and in one recorded case an eyelash. Cysts lined with layers of cells like those on the anterior surface of the conjunctiva have been known to form in the cornea after gunshot and other accidental wounds, as well as after operations for cataract, and are almost certainly derived from conjunctival epithelium forced into the deeper layers of the cornea.

Barfurth in his experiments on the regeneration of the embryonal layers observed that by puncturing and turning in the ectoderm of the gastrulæ a growth of cells like a dermoid took place. Maas succeeded in producing dermoids artificially in animals by implanting pieces of skin of newly born animals into the peritoneal cavity. A ruptured ovarian dermoid has in a few instances given rise to multiple secondary dermoids on the peritoneum of the size of cherries, each of which contained a tuft of lanugo-like hair. These instances of tumours arising from accidentally produced matrices give great support to the view that other new growths may be developed from other post-natal matrices the results of injury or inflammation or formed during the repair of wounds.

(*c*) It has been unquestionably proved that the "tumour germ" theory correctly accounts for the origin of many varieties of benign solid tumours and of dermoids and other cystic tumours, and we must now try to answer the question with which we are especially concerned: Does it not afford the true explanation of the etiology of malignant tumours also? In attempting to reply to this question it may first be pointed out that regions and organs in which embryonal inclusions are specially likely to occur are also common situations of primary malignant diseases. To realise the truth of this statement we have but to recall the frequency of sarcoma near the ends of long bones, the occurrence of myeloid and periosteal sarcoma and epithelioma in the mandible and upper jaw, of carcinoma of the uterus, œsophagus, stomach and rectum, and tongue and mouth. In the lip the commonest seat of origin of carcinoma is along the line of junction of the skin and mucous membrane. In the rectum the parts at or near the junction of the skin and mucous membrane, and those near the union of the proctodæum (cloaca) and the hind gut, are the areas of the greatest liability to carcinoma. In the stomach the pylorus and its immediate region are the chief seats of carcinoma, and it is here, as Cohnheim has pointed out, that the anatomical structure of the organ varies most; it is here also that there is the greatest liability to pathological changes and thus to the development of post-natal as well as of congenital matrices. Such anatomical areas as those just mentioned, like the cervix uteri, are zones of transitional epithelium and are provided with glands not always of normal functional perfection; in these so-called "cancer belts" we may expectantly look for "tumour germs" in the form of isolated congenital nests of embryonic cells.

In a thesis for the Doctorate of Toulouse in 1902 Guillaume Cargue has written on the occurrence of epithelioma in the old sites of osteomyelitis. Cargue quotes 44 cases collected from literature, together with five cases observed in the clinic of Professor Jeannel of Toulouse. In all these cases epithelioma of the bones was due to fragments of skin which became invaginated or to detached epidermis cells which became implanted in the bones. The carcinoma appeared either in a diffuse form or completely inclosed in the tissue of the bone. Cargue refers to other cases of primary epithelioma of bones after fractures and in connexion with necrosis. He also quotes from a communication on "Tumours of Bone" made to the Congress of Surgery in 1899 by Polosson and Bérard of Lyons to the effect that epithelioma occurring in the maxilla is always due to the proliferation of epithelial cells of the mucous membrane which have become included in the bones with the dental germs. He refers also to Nicoladoni's work on the formation of epitheliomata in sequestration wounds. Several observers are mentioned by Cargue as having contributed to medical literature cases of epithelioma which have developed in old scars, ulcers, callosities, fistulæ, and such like affections of the soft parts, and he concludes that the paucity of these and of similar recorded cases of primary epitheliomata in connexion with bones is due to surgeons not having recognised the real nature of the disease or of having failed to ascertain the actual seat of it.

Various forms of malignant tumours of the kidney are attributed to fœtal rests, such as adrenal inclusions and aberrant renal tubules, embedded in the capsule of the

kidney and capable of being stimulated into epithelioma. Dr. Charles Creighton has described malignant tumours as arising in and near the mammæ, and in the axillæ from certain sweat glands situated under the skin, not usually in it, but between it and the axillary fascia. These sweat glands sometimes occur also along the lateral and anterior regions of the chest and as appendages of the milk sinuses scattered through the mammæ. They must be regarded as survivals or rudimentary organs, and as being subject to all the risks of such survivals or rudiments. Dr. Creighton also describes coiled tubular glands and a rudimentary mammary lobule consisting of a branched tube without real acini as being the starting points of carcinoma within the mammary gland, and he considers that the proper mammary structure takes really no part in the morbid growths of the organ. Volkmann described deep-seated primary carcinoma originating in the neck from the branchial clefts under the name of "carcinoma brancheogenes," and Guttmann refers to similar cases starting from accessory thyroids as "struma carcinomatosa accessoria." In the cases of multiple tumours in bones of the nature of thyroid tissue recorded by myself and others the conclusion was irresistible that the tumours were metastases from accessory thyroids or from matrices or "inclusions" within the substance of the thyroid gland itself. It is doubtless due to the fact that in these cases, as in some instances of carcinoma, the metastatic growths so far exceeded in size and conspicuousness the primary tumour that the nodule in the thyroid gland from which the tumour cells had migrated has been overlooked. I am indebted to Dr. E. F. Bashford for the details of a case recently published by von Oderfeld and Steinhaus which is a strong confirmation of this opinion. A nodule slightly differing from the normal thyroid tissue and surrounded by a connective tissue capsule was found in the right lobe of the thyroid of a female, forming a primary tumour from which metastases in the cranial bones, the clavicle, and the sternum were derived. The pernicious growth of the chorion, known as deciduoma malignum, which occurs in the human uterus when the embryo is aborted or dies before the asexual generation has been suppressed, was pointed out by Marchand in 1895 to be of a carcinomatous character, and is quoted by Beard as affording "the key to the problem of the nature of cancer," and as making the cause of cancer "clear as the light of day."[11]

The remnant of ovarian tissue occasionally left behind after an ovariotomy may become pathologically active, serve as a post-natal matrix, and develop into malignant disease. Roger Williams[12] attributes the extraordinary frequency of malignant disease which follows the removal of one or both ovaries, and which in Spencer Wells's experience amounted to 36 per cent. of the known causes of death of those who had recovered from the operation, to the excessive formative activity aroused after the operation in the aberrant accessory ovarian structures which are so frequently present in the broad ligament and its vicinity.

Primary carcinoma originating in a situation where no epithelium normally exists sometimes springs from a previously undetected dermoid cyst or dermoid-cyst matrix. A displaced matrix of epithelial cells isolated from its own blastodermic tissue and buried in the mesoblast, if it becomes a tumour, will develop into one of an epithelial character. Tumour cells, like normal cells, always breed true. Connective-tissue cells cannot produce epithelial cells, and epithelial cells invariably produce their own kind and no other. Virchow when he met with a primary carcinoma in the tibia, not recognising this physiological law, believed the cells of the carcinoma were produced from the connective tissue at the spot where he found them and called them epithelioid. The knowledge of this law as applied to a carcinoma developed from a displaced or misplaced epiblastic matrix which has been roused into proliferative activity by some exciting agent corrects such a histological error and explains the occurrence of the heteroplastic tumour. It also explains how an "endothelioma," which resembles carcinoma in its characters, is developed as a primary new growth in serous membranes and lymphatic glands—structures which are of mesoblastic origin and in which, therefore, no epithelium normally exists; it likewise explains how a glioma, which in its anatomical and clinical characters is a sarcoma, can occur in the brain or retina which are derived from the epiblast.

[11] THE LANCET, June 21st, 1902, p. 1750.
[12] THE LANCET, Nov. 14th (p. 1395), and 28th (p. 1530), 1903.

6. We must next inquire whether the "tumour germ" theory can account for the transformation of a benign into a malignant new growth. We need not stop to inquire what evidence there is that this transformation ever takes place. The fact of its doing so is no longer, as formerly it was, disputed. Warts, moles, dermoids, fibromata of the skin, uterine myomata, and papillomata in various situations might be quoted in proof of benign tumours passing into malignant.

The change to malignancy may originate in a matrix of tissue derived from the organ or part affected and which has become sequestrated and inclosed within the structure of the benign tumour during the process of the growth of the tumour. Or in the process of its growth some of the daughter cells within the benign tumour itself may fail to attain the degree of differentiation of the parent cells and may subsequently develop on their own account into a malignant neoplasm. A woman under my care some years ago was the subject of an intramural uterine fibro myoma which became the seat of colloid carcinoma. The case was published by Mr. W. Roger Williams[13] who mentions that a few cases of carcinoma originating in uterine fibroids had been recorded by Virchow and others. It is probable that in my case the carcinoma, which was clearly glandular, was developed from the deep extremity of one of the utricular glands sequestrated in the process of the growth of the fibro-myoma and which thus came to form an epithelial tumour germ—just as glandular elements have been observed in the analogous new growths of the prostate.

### OTHER EVIDENCE IN FAVOUR OF THE "TUMOUR GERM" THEORY.

**A. The matrix theory escapes equally the objections raised against the local and the constitutional theories of cancer.**

We have only to suppose the presence in the same person of two or more matrices, or "tumour germs," of which there are many instances, and to bear in mind that these matrices are generally of congenital origin, and that other causes besides senility can both arouse into activity the cells of a matrix and weaken physiological resistance of the adjacent tissues, to dispose of the following chief objections to the local doctrine: (1) that malignant tumours occasionally occur simultaneously on the two sides of the body; (2) that malignant disease if it were really local ought to be completely cured by early and free excision; (3) that malignant disease frequently attacks several members of the same family; and (4) that carcinoma occurs in its most virulent forms in very early life before the tissues have become debilitated or undergone senile decay.

Again, by remembering the fact that an exciting cause is necessary to arouse a dormant "tumour germ" into active cell proliferation, and that in the absence of such a sufficient stimulus the "tumour germ" will continue quiescent throughout life, the following objections against heredity are easily answered: (1) cancer, as a rule, shows no sign of development in the parent until after the birth of the offspring; (2) that it is not in accordance with the laws of heredity that a disease which, as a rule, does not show itself in the parent till long after the birth of the progeny should manifest itself in the progeny; and (3) that cancer is often seen in the offspring of parents who are still living and free from any cancerous disease.

Such objections as these to the constitutional theory are in reality rather quibbles than arguments. As to the third, I may here remark that I have known several instances of parents, themselves in good health at the time, losing a child from carcinoma, but subsequently one or other of them has likewise died from the disease. And as showing a general tendency to the inheritance of "tumour germs" we must all have known of many cases of lipoma, nævus, fibro-adenoma, dermoid, and other tumours developing in the children of parents who have died from cancer or in parents who have lost a child or children from cancer.

**B. The matrix theory enables us to understand the long intervals which occur after removal of cancer by operation before recurrence takes place, for just as the "tumour germ" of the primary growth remained for years unaroused, so a single cell or a few cells migrated to a lymph gland or duct or into the areolar tissue some distance away may continue quiescent owing to the efficiency of the physiological resistance of the surrounding tissue. The cell or cells are the "tumour germ" of the recurrent growth as the original matrix was of the primary, and are subject to the same kind of restraint and respond to the same kind of stimuli.**

**C. The "tumour germ" theory also explains the so-called recurrences, after either short or very long intervals, in parts or organs away from the original site and out of the line of direct lymphatic infection. It explains, too, the development in the same person of two malignant tumours of different blastodermic sources and of their existing simultaneously, or of one occurring after the other has been excised.**

I will quote two instances in which the very early removal of a primary growth and the wide extent of its removal and the many years of freedom from any fresh outbreak of disease seem to make the idea of ordinary recurrence more than improbable. Two ladies of about

[13] Transactions of the Pathological Society, 1886, vol. xxxvii., p. 354.

the same age, not related to each other, one a widow and the mother of six children, the other a spinster, had their left breasts removed for carcinoma in the same week. In the widow the operation was performed within a week, in the other within a month or five weeks after the detection of the tumour. Both remained perfectly well for over 11 years and then by a remarkable coincidence they both returned to me in the same week. The widow was complaining of a pain in her right foot, loss of strength, and shortness of breath; the other had a small nodule in the skin at the axillary end of the cicatrix. The widow had developed a freely moveable, smooth, round tumour with all the clinical characters of a fibroma in the middle of the back of the right thigh and several weeks later a number of hard masses were detected in the liver. She rapidly emaciated and died within six months from asthenia without jaundice and without ever having had the least sign of return of carcinoma in the left mammary region. The single lady had throughout life had a slight but noticeable prominence in the middle of the sternum and a year or more after the cutaneous carcinomatous nodule had been removed and over 12 years from the date of the primary operation the sternal prominence began to increase rapidly; in the meanwhile signs of new growth in the upper cervical vertebræ became evident and one night she died quite suddenly (as her friends and attendants had been warned she might do) when trying to turn or to raise her head from the pillow.

A histological examination of the later new growths was not obtainable in either of these cases, but there is, I consider, ample reason for thinking (1) that the thigh and liver tumours in the one case and the sternal and spinal new growths in the other were not recurrences in the ordinary sense of the word; (2) that they originated from distinct congenital matrices which remained unaroused to tumour formation for many years after the mammary matrix had developed into carcinoma; and (3 that they were in all probability not of the same nature as the primary disease.

**D. Lastly, the "tumour germ" theory affords a better explanation of the local extension of carcinoma than any other which has been put forward. It ascribes it to cell proliferation of the margins of the matrix; the growth of the tumour to the multiplication of the matrix cells, not to the "reversion" or conversion of the pre-existing mature epithelium into tumour tissue**

These cells penetrate deeply beyond the basement membrane into any and all of the mesoblastic structures, opening them out by the rapidity of their increase, displacing and then removing them by pressure-atrophy, exfoliation, or sloughing. We can thus understand how an epithelioma of the skin or mucous membrane besides spreading laterally burrows upwards from beneath, and destroys the epithelium covering its margins; instead of extending from epithelial cell to epithelial cell by continuity over the surface like a cutaneous erysipelas.

The foregoing are some of the reasons for regarding the "tumour germ" theory as the most, indeed in my opinion as the only, probably correct theory of cancer origin which has ever been put forward—as the only hypothesis which is consistent with all the known facts of cancer. Hitherto, what would seem to be the strongest evidence against the "tumour germ" theory is that which seems the strongest evidence in favour of the microbic theory—namely, the successful serial experiments upon mice with cancer tumour tissue which were carried out by Morau in 1893 and have been recently repeated by Jensen and Borrel. But Borrel admits that his successful series was only obtained by treating at each "*passage*" a number of mice, varying from 12 to 15 This is of much importance, because many mice were found to be unaffected. The proportion of successes to the total number of animals experimented upon at each "*passage*" in the series ought to be given by each experimenter. The tendency to the development of cancer in mice would seem to be strong, judging from what is stated in Borrel's paper as to the frequency of cancer in certain caged mice not operated upon.

Up to the present time the microbic theory has not advanced our knowledge of the cause of cancer one iota in spite of all the talent and skill which have been employed upon it, whereas every year facts in support of the "tumour germ theory" are discovered almost without being sought for. Excepting for these aforesaid recently discovered facts our knowledge of the causation and nature of cancer would be no greater now than it was 30 years ago; indeed, the very facts about cancer which were recognised and established a generation ago are to-day the strongest *a priori* arguments against the microbic origin of cancerous diseases. The truth is that for the last 10 or 15 years cancer research has been too exclusively directed to microbes and too little to cancer. The attention given to cancer research by many able workers has been too restricted to the search for the problematical "cancer organism" to allow of much thought being directed to the other factors in cancer. The "high power" lens and the fine adjustment—so to speak—have put into the background for the time being the binocular field-glass with its adaptability for focussing the various features of an extensive perspective. It is, however, well that all these bacteriological observations and experiments have been made; indeed, others are still necessary if only to clear up certain difficulties respecting the nature of the so-called "cancer bodies" and how they come to be present in the cancer cells. But what is wanted, also, is that some equally skilled research work should be directed to other questions—embryological, morphological, chemical, and functional—to such subjects, for example, as those to which Marshall drew attention in his suggestive Morton lecture, namely, the chemistry of cancer tissue, the structure and changes in the stroma, the minute anatomical relation of nerves to the cancer cells, and of the effect of the loss of control of the nerves over them. We want more information respecting the state of the arteries in cancerous new growths.

Thiersch called attention to degenerative changes in the arteries in cancer and Senn states that proliferative endarteritis was found as a rather frequent accompaniment of carcinoma where there was no indication of the coexistence of the same condition of the arteries in any other part of the body.

**The arterial changes in cancer tumours have not so far been sufficiently studied. They may, however, prove to be of importance in connexion with treatment, with the clinical effects and histological results of the x rays upon cancer, and also in relation to the rate of growth and to the tendency to metastasis, to the various degenerations, and to ulceration and sloughing of cancerous tumours.**

All questions of this kind possibly might be worked out in private or hospital laboratories, but there are numerous other important questions to be answered, e.g., as to the agencies which excite into action the invariable and unconditional cause of cancer. These never yet have been properly investigated and they can only be so by some organised scheme such as that which has recently been undertaken by the two Royal Colleges. Questions as to the geographical and racial distribution of cancer, of climate, soil, articles of diet, occupations, cancer houses, and many others, can only be settled after statistical and other investigations have been made and checked and cross-checked, controlled and re-controlled by each other. Such investigations are beyond the means and powers of individual science workers or of medical institutions; they need to be undertaken by an organised body with relays of workers and sufficient funds at its command to provide for the uninterrupted pursuit of the inquiries.

Katz of Hamburg, whom I have previously quoted, remarked "it is to be deplored that Cohnheim's doctrine has so long found an extended acceptance, for the further development of cancer research would have, through it, no value. A standstill would result from the fatalism which underlies this theory. The same may be said with regard to Ribbert's theory, which, though of far later date than Cohnheim's, is in pursuit and continuation of it." But a theory if it has the evidence of truth must be minutely and impartially examined, even though it seems to lead to a conclusion which we might wish to escape. There is, however, no occasion for so pessimistic a view as that of Katz. The "tumour germ" theory, at least does this; it convinces us of the local origin of cancer and of the positive curability of it if removed quite early and completely. Of course, it does not guarantee one against the formation of another malignant new growth any more than the repair of a broken bone guarantees one against the occurrence of another fracture. It should also encourage the early and more frequent removal even of benign growths. Future researches may reveal a method whereby a special inhibitory influence may be brought to bear upon the cells of the "tumour matrix" on the lines tried by Foulerton, or a restraining, even a strangulating, effect upon the tumour cells by the tumour matrix may be produced, as suggested by Marshall. But in any case we can reasonably hope and expect that the organised researches now commenced by the Royal Colleges will in time yield much information as to how to prevent cancer by teaching us what are the real agencies which stimulate it into existence.

In bringing these remarks to a conclusion I will borrow the description recently given by Mrs. Crawford of the mind of the late M. Thiers and apply it to the theory founded by Durante and Cohnheim. "It has searchlight luminosity. Like radium, it keeps burning brightly without consuming itself." And I would add, it will not only remain active and brilliant to the end but it will, I believe, shed more and more light on the etiology of cancer with every fresh addition made to the science of embryology and to our knowledge of tumours.

# ANTITUBERCULOUS SERUM AND "VACCINE."[1]

BY DR. ALEXANDER MARMOREK.

As soon as tuberculin began to be practically known by its effects a question forcibly presented itself—namely, What is the rôle played by this toxic substance as regards the essence of the disease? Is it the real toxin, is it the poison particular to each microbe the action of which is the exclusive, or at least the principal, cause of the pathological lesions? In searching for an answer to these problems we were, above all things, struck by the singular inequalities which a similar dose of tuberculin produced when injected into different subjects—to wit, those who were healthy, those who were affected with tuberculosis in a moderate degree, and those who were practically being poisoned by the bacillus of Koch. In a case of tuberculosis of a mean intensity the explanation commonly given suffices eventually—that is to say, the animal becomes increasingly sensitive to the action of a toxin which it has been itself for some time previous producing in the lesions in its own body. But all the same this explanation leaves untouched the reason for the lighting up of the bacillary foci, which symptom constitutes the local reaction. But, further, it is almost impossible to apply this explanation to cases in which the typical symptoms are very feeble or even absent, as, for instance, after an injection of tuberculin in a cow which is simply stuffed with tubercles. In place of the reaction which the above-mentioned explanation would lead us to expect we see marked insensibility. We therefore have a right to ask why this sensibility (*sensibilisation*) disappears just at the moment when it should be most accentuated. The obscurity of the problem increases when we consider the very marked disproportion which exists between the violence of the reaction and the small dose of tuberculin on the one hand, and on the other hand the very slight degree of lesion existing in individuals so little affected by their chronic intoxication that they can hardly be considered to be ill. It is difficult to suppose that these few bacilli, finding themselves in a focus where the fires of infection are slumbering and almost imperceptible, can be sufficient to transform the indifference of a healthy organism to tuberculin into an almost excessive sensibility. But it is still less easy to understand how an organism which is thoroughly tuberculous, with its innumerable bacilli, all in full working order and of great activity, does not respond with greater energy to the stimulus of tuberculin than is seen, for instance, in the case of a bovine animal that has passed through all the stages of the formation and evolution of its infective centres, one in which everything testifies to a chronic intoxication and which is not sensible (*sensibilisé*) to the action of tuberculin. And yet, according to the above-mentioned theory, a poison should in such an animal have been in process of formation for a long time and the animal should therefore be markedly sensible to the injection.

Contradictions such as these forced us to conclude that the explanation given above must be erroneous or defective. There remained only to find a new explanation which should be more in accordance with observed facts and which would lead us to a new method of research. To attain this end let us consider the situation of the bacillus of Koch in its usual habitat. Surrounded by leucocytes or in the giant cells it apparently secretes so little toxin that the addition of an infinitesimal number of microbes brings about an appreciable change in the affected organism. All of a sudden we stimulate the bacilli by a minimal dose of injected tuberculin which disseminates itself through all the foci of infection. The tuberculous organism, which it is asserted is sensible to the effects of tuberculin, allows many hours to pass before exhibiting any new symptom. It is only after the lapse of a fairly long period of time that the foci of infection inflame and that the whole body resents the effects of the poisoning. Moreover, a tuberculous man after a time ceases to give the typical reaction and if the injections of tuberculin be continued the sensibility diminishes instead of increasing, as it should do were the above-mentioned theory correct. We refuse in face of such contradictions to admit that tuberculin can be the direct cause of the reaction brought about by its injection, that it is a substance identical with that which the bacilli principally form in the sick organism, or that in consequence it is the final chemical reason for the wasting and for the destructive march of the bacilli. But all these difficulties disappear if we replace the current theory by an hypothesis—viz., tuberculin would seem to be in truth a preparatory substance, a reagent which acting on the bacilli stimulates them and induces them to secrete in great abundance a toxin altogether different.

Let us now consider the facts in the light of this hypothesis. Reaction does not commence until a sufficient quantity of time has elapsed to allow a sufficient quantity of toxin to accumulate in a focus of infection. We are present (*assistons*), in fact, at the hatching of the local reaction. When at the end of some hours the toxin secreted by the bacilli begins to be reabsorbed into the circulation the intoxicated organism responds by exhibiting fever. We can formulate our idea as follows. The "tuberculin reaction" is due to the formation of a toxin which the bacillus secretes by reason of, and subsequently to, its stimulation by the tuberculin. It is easy to understand that by this specific effect of the tuberculin on the bacillus (it may almost be compared to a key opening its lock) the most deeply seated collections of tuberculous matter are transformed into a regular furnace for the production of toxin which can be made known by investigation. We can equally understand how it is that every little tubercle containing a few scattered bacillary units will react promptly to a dose of tuberculin which represents a thousandth part of the quantity which is without effect in a healthy individual or even less. We can also understand the almost mathematical accuracy of the axiom "tuberculin reaction means tuberculous focus." Moreover, all the other phenomena which the old theory left uncertain or doubtful to our understanding become perfectly clear.

This explanation of the part played by tuberculin is particularly useful when we consider the two extreme cases of perfectly healthy individuals and of individuals who are highly tuberculous. In the first case, the tolerance exhibited even to a very large dose of tuberculin is due to the absence of the bacilli which are the sole producers of the true toxin so that the presence of bacilli is indispensable to intoxication and from their absence arises the impossibility of the tuberculin being able to produce an effect. In the second case, take, for instance, a cow which is very deeply affected with tuberculosis. The whole sum of the toxins newly produced by the injection of Koch's reagent is quite a negligible quantity compared with the amount of the real toxin which has already accumulated in the many foci of infection and throughout the entire economy of the animal. The bacilli are already at work with extreme activity (do not let us forget that we are speaking of the case of tuberculosis which is very advanced) and are already practically soaked in the toxin. We may well ask ourselves if tuberculin is sometimes able to stimulate the work of the bacilli and to augment it, but in any case the increase of toxin, if indeed there is an increase produced by the tuberculin, is infinitesimal compared with that which has already been secreted owing to the natural evolution of the disease and it is by no means sufficient to cause a new intoxication which will betray itself by reaction. The result, therefore, is identical with the case of a healthy person. In neither case is there any reaction, but the reasons are diametrically opposed to one another.

Other facts which have been ascertained in the study of tuberculin reaction fall in well with our hypothetical explanation. For example, it is quite easy to understand that substances having a similar composition to tuberculin will equally stimulate the bacillus to its secretion. We know well the feeble reactions produced by an injection of extract of lymphatic glands and, on the other hand, it is easy to understand that an organism invaded by the bacillus of lepra, which is so similar to the bacillus of Koch, will give the reaction after injection of tuberculin and, finally, the treatment with tuberculin which was given to the world by the illustrious Koch finds its explanation so far as regards both the undoubted cures produced, and also the checks and the

[1] A paper read before the Paris Academy of Medicine on Nov. 17th, 1903.

dangers of this method, in the true rôle of tuberculin—viz., the successive production of the true toxin which is poured out from the bacillary foci into the general circulation. By tacking carefully between the shoals of this general poisoning and the maintenance of the necessary intervals of time for the formation of an antitoxin which is destined to counterbalance the intoxication we may sometimes be able to modify favourably the morbid process, but we can easily see how risky and how prone to dangers is such a proceeding.

Serums have been prepared by the aid of tuberculin and are still being so prepared. As, however, these serums attack a substance which only plays a fortuitous rôle, if not, indeed, one which has absolutely no effect in the pathology of tuberculosis, we must not be surprised if these serums, which are wrongly called antituberculous although they are simply antituberculinous, should have no influence upon either the lesions or the progress of the disease.

If our hypothesis is correct—and everything which has been previously said supports the idea that it is so—the principal part in tuberculosis belongs to the hypothetical toxin. Experiment, therefore, should furnish a positive proof both of its existence and of its action. It appeared to us that if the bacillus hitherto has not produced this toxin outside the organism when grown in vitro, it was because it was not grown under conditions which faithfully reproduced those which exist in its habitual environment in the body. We therefore arranged some experiments to reproduce these conditions as far as possible and we proceeded as follows.

In a small communication which I read before the International Congress of Medicine held at Paris in 1900, I laid great stress upon the different phases of the life-history and the growth of Koch's bacillus. The young microbes which we designated under the name of "*primitifs*" having different colour reactions should also exhibit different biological qualities. We then, however, lifted only a corner of the veil which hid the matter. There appeared to us every indication to employ these young microbes, which are covered with a very delicate shell of a waxy or fatty substance, in the delicate work of producing a toxin, and another reason was that in liquid medium they produce only a very small quantity of tuberculin and that very slowly, for the presence of tuberculin could not be otherwise than disturbing in the research for another toxic matter. We soon saw that these *primitifs*, which within ten or 12 days almost completely covered the surface of the liquid medium in which they were sown, secrete no toxin in their ordinary culture mediums. It remained, therefore, to reproduce more natural conditions. As the bacilli undoubtedly form the substance for which we were searching in the organism—that is to say, within the interior of the leucocytes or after having come out from them—the idea struck us to put them in contact with freshly extracted white blood corpuscles. The experiments made in this direction were long and laborious but with no appreciable result. Convinced, however, of the accuracy of our hypothesis we were slowly brought to find a proof of it by another road. We thought, can it be possible that within the bacillary foci the leucocytes do their work not so much by being biological entities as by some substance which is derived from them? We therefore replaced the leucocytes in our experiments by a leucocytic serum obtained in the following manner. We injected into calves, whose receptivity of tuberculosis is well known, the leucocytes of a guinea-pig which is also an animal extremely sensitive to the action of the bacillus of Koch. To obtain these leucocytes was a very simple proceeding. From 10 to 15 cubic centimetres of peptonised bouillon were injected into the peritoneal cavity of a guinea-pig and 48 hours afterwards this was washed out with 20 cubic centimetres of normal salt solution (*eau physiologique*) which came out with a milky appearance, being full of leucocytes. This was injected as soon as possible into a calf. At least 30 injections have to be made, each containing the leucocytes derived from two guinea-pigs, to bring about the production of a serum having active leucotoxic properties. The primitive bacillus grows in this medium with great difficulty, but it is possible to grow it by a process of patient selection and by adding thereto a small quantity of glycerinated bouillon. The great object is to avoid for as long a time as possible the loss of the primitive character of the bacilli, for our observations have taught us that the secretion of tuberculin marches step by step with this transformation of the primitive bacillus which can be recognised by a change in the aspect of the waxy and transparent enveloping membrane, which becomes warty and opaque, and also by the appearance of a specific odour.

The filtrate made from cultures of bacilli grown in this leucotoxic serum medium does not contain tuberculin for a long time, but another toxic substance is discoverable in it. Contrary to what is found in the case of tuberculin, tuberculous animals were no more sensitive to this substance than were healthy ones. When this feebly toxic substance was injected into horses it produced general œdematous patches which in some cases were of considerable size. To increase the toxic power of this substance we tried all the culture mediums known and we have also experimented with some new substances, always mixing them with the serum, but without getting any result to satisfy us. One important point, however, was decided. The bacillus can be rendered more toxigenous and a more active producer of true toxin. Our task was therefore to keep the bacillus in its primitive stage as long as possible in order to permit it to secrete abundantly.

In the course of our researches one fact attracted our attention more and more strongly—viz., a certain degree of immunity which the liver possesses with regard to the invasion of the bacillus. We constantly observed that the animals in the laboratory which were attacked by general tuberculosis showed extreme slowness as regards the infection of the liver, and that very often the liver remained perfectly free from tubercles although all the other organs were stuffed with them. To explain this condition of resistance the anatomical conditions are certainly insufficient and we must, therefore, seek for causes of some chemical nature which are capable of arresting for a certain time the development of the bacillus. If then, we argued, we could force the bacilli to live and to grow in a culture medium containing liver substances it might be possible to obtain a strain of bacilli particularly fit to fight against these hindering (*empêchantes*) substances. The struggle for life which would be forced upon the bacillus would augment all its vital qualities and by so much the more would its toxigenous power be increased.

As might have been expected difficulties were at first experienced in accustoming the bacillus to an environment apparently unfavourable to its successful culture. But once we had succeeded we found that the bacillus grew more quickly and with greater freedom than in the control cultures and it remained "primitive" for a longer period. It also became markedly more virulent and when injected into animals rapidly brought about a generalised tuberculosis. Moreover, after passing the bacillus a certain number of times through this new culture medium we were struck by the absence of tuberculin, but we recognised the presence of another toxic substance wanting the characters of the Koch reagent. It would almost seem that these two substances exclude each other from the same medium and that the bacilli are incapable of producing one of them simultaneously with the other. It is possible that in this fact lies the explanation of the feeble and tardy appearance of tuberculin in those infected with bacilli (*bacillaires*). The toxin which is formed in the liver bouillon passes easily through a filter. If a fairly large dose, say from 12 to 14 cubic centimetres, be given it kills small animals, but this effect is not constant.

Each of the two new culture media which we have described favours the formation of toxin in small quantities. By mixing the leucotoxic serum with the glycerinated liver bouillon a great improvement is obtained. The toxin forms more quickly and is much more virulent. The smallest fatal dose for a guinea-pig weighing from 300 to 400 grammes was five cubic centimetres of the filtrate, but in general we prepare a toxin which will kill a rabbit or guinea-pig of mean size in eight days' time by a dose of from eight to ten cubic centimetres injected subcutaneously. Tuberculous animals injected with the same dose do not die so quickly and have a more defined power of resistance. This degree of toxic power does not resemble that of other known toxins. We do not disguise that the strength of ours is far from being satisfactory and all our efforts are towards bringing to perfection its preparation which we do not consider yet as definitely settled.

Two experimental courses are now open to us whereby we can prove that this substance is in truth the toxin so long sought. The first is that of immunising animals by means of this toxin against an ulterior bacillary infection. We have done this. From 25 to 30 cubic centimetres of actual toxin are required, given in several

injections of from four to five cubic centimetres at proper intervals, to render guinea-pigs resistant to the subcutaneous injection of from one to two drops of a feebly opalescent emulsion of bacilli. This result is the most exact confirmation of the identity of our toxin with that which the bacillus secretes in a tubercle. But there is yet the other course which supplements this proceeding. By immunising animals with filtered cultures we obtain an antitoxic serum. We have experimented with horses in this direction. They reacted very strongly to the increasing injections of toxin. Large swellings were formed: the temperature mounted to 40° C. and more; the animals were very highly tested and the absorption of the swelling was slow. It is not easy to obtain tolerance of the toxin in horses. Every new injection is followed by the same symptoms, though manifested with declining virulence and we must therefore allow at least seven or eight months for the preparation of an efficacious serum. It is with the serum of an immunised horse that we have attempted by neutralising the effects of the tuberculous toxin to treat at first with a view to prophylaxis laboratory animals, guinea-pigs, and rabbits. Such a serum prepared without any injection of bacillary bodies, but only by means of injections of the filtrate of the culture, is a new proof of the existence of the action of the tuberculous toxin.

Before giving the result of our experiments with this serum upon the laboratory animals and upon the tuberculous human subject we will return to the consideration of the bacillus rendered assimilable after having been subjected to the influence of leucotoxic serum. Hitherto we have not been able to inject an animal with the bacillus of Koch without causing an abscess. Even when exposed to high temperatures or destroyed by powerful antiseptics the bacilli were never digested by the leucocytes, although these would absorb (*englobent*) them at once. The result is quite different when bacilli are used which have been a long time in contact with the leucotoxic serum. The following is the process. The bacilli are submerged for from ten to 15 days in the leucotoxic serum, which is then replaced with normal salt solution (*eau physiologique*) and brought to a temperature of 100° C. The bacilli thus prepared were transferred to leucocytic serum first, some days later being placed in antituberculous serum. It is then seen that these bacilli injected in weak doses into animals disappear quickly without leaving any trace. Rarely a little infiltration remains but in no case does the inoculation cause any general infection.

As soon as we were able to prove the digestion of the tubercle bacilli the idea came into our minds that the bacillus truly assimilated would be able perhaps to confer a certain immunity on an animal. It is quite possible, in fact, that the absence of a stage of resistance in men or animals proceeds from the absence of digestion of the bacilli. Finally, when we were able to see guinea-pigs and rabbits tolerate without the formation of abscesses repeated injections of strong doses of bacilli thus prepared we inoculated them with living bacilli; and we have been able to prove that even some particularly dangerous inoculations, as, for example, abdominal injections in the guinea-pig and intravenous injections in the rabbit, had no effect, while grave lesions took place in the control animals. The "vaccine" requires from six to seven days to produce immunity. Its effect is distinctly lasting. We have been able to prove already that in the rabbit the resistant state produced by the injection of eight cubic centimetres of "vaccine" lasts two months.

We do not yet know if the immunity thus acquired can be prolonged beyond the period experimentally determined. If it were possible to extend the period of immunity to a year it would be very interesting to apply the "vaccine" to cattle, which we propose to do. One point only is to be remembered. As the identity of bovine and human tuberculosis no longer is in doubt it probably will be sufficient to use for experiments the same "vaccine" that we have employed for smaller animals and which was derived from human bacilli. But nothing would be easier if it became necessary than to prepare according to the same method a "vaccine" derived from the bacilli of bovine tuberculosis.

We wish now to give an account of the effect of antituberculous serum upon animals and of the trials made with it upon human subjects during more than a year. The first samples of serum at our disposal were much less efficacious than those which we employed during the last month. This was because at first the serum was relatively inactive and later because the immunisation of the horses was not pushed sufficiently far. For these reasons the earlier results are not comparable with those of to-day. The serum, moreover, is capable of improvement and in the future will be made more efficacious.

What can we learn from experiments upon the lower animals? At first we confined our attentions exclusively to guinea-pigs. These animals are extremely sensitive to Koch's bacillus and are difficult to immunise. Strong doses of serum are required to protect them against weak bacillary injections. And how are we to arrive at the measure of efficacity of the serum, allowing that its efficacity is not yet absolute? The test employed in acute diseases—the survival of the animal treated and the death of the control animal—is of no value here. The guinea-pigs display too great differences of individual sensitiveness: the cachexia and the duration of life vary so often in two animals which have been injected under identical conditions. The invariable factor is the regular sequence of anatomical lesions. These were our sole guide in proving the influence, even when slight, of the serum. For these reasons we prefer the rabbit for experiments. Certainly it is less sensitive but effects of injection are more constant. With the rabbit the serum acts in a definite manner upon the artificially produced condition, even at a moment, when its curative influence upon the guinea-pig is only slight. We always produced in the rabbit the severest form of infection by intravenous inoculation. The serum has both a preventive and a curative "action." From 15 to 20 cubic centimetres of serum injected three days before the infection definitely protect the rabbit.

The following oft-repeated experiment is still more interesting. Rabbits of a medium size receive from one to two drops of an emulsion, feebly opalescent, of virulent bacilli in the marginal vein of the ear. Some hours after the infection a group are injected with 20 cubic centimetres of our serum subcutaneously; the next day a second group similarly receive 25 cubic centimetres, and two days afterwards a third group are injected with the same dose. The last groups we inject once again with 20 cubic centimetres. We keep a fourth group for control. 20 days after the infection the control animals exhibit in the lungs countless tubercles as large as a pin's head. At the death of each control animal we kill an animal out of each group. They are all found free from tubercle. Those that we do not kill survive in perfect health. For the preventive immunisation of guinea-pigs and rabbits we have proved it very useful to give many small doses, while for treatment we can content ourselves with one large dose. The doses for the two animals are always practically the same, the large size of the rabbit in comparison with the guinea-pig being compensated in the latter by its greater sensitiveness to the bacillus of Koch. A serum not sufficiently active to cure a guinea-pig, although arresting in it the progress of infection, can be efficacious for the rabbit, so it is with the rabbit that the use of the serum should be begun. At present we have only the empirical method for testing the serum. It is considered sufficiently active if it can prevent the tuberculous process of the lung in a rabbit infected by intravenous injection.

It is thus experimentally proved to-day that the serum counteracts the bacillus of Koch. We admit willingly that stronger doses have to be used. But we ought not to lose sight of the fact that we have experimented with animals of absolute and excessive sensitiveness and whose natural means of defence are certainly insufficient. The rabbit, in comparison with the guinea-pig, requires less curative power in the serum. Man, provided with very real means of defence against tuberculosis, ought to derive greater advantage from the antituberculous serum. Our laboratory results, acquired by the most varied experiments repeated over and over again, give us the right to use the new serum in the treatment of the tuberculous human subject. For more than a year we have made trials of the serum. When it is remembered that, on the one hand, we used at first a serum of a more feeble curative power than the serum as now prepared and, on the other hand, that our subjects were at that time severe cases, the first results only prove the harmless nature of the serum. Slowly our results began to take shape, for our serum became more active, while we had patients confided to us who were less hopelessly ill. Without wishing here to enter into clinical details we can divide our patients into two general groups. The first of these present such lesions that the whole organism must be under

a powerful toxic influence; among these are included patients having extensive pulmonary lesions (with cavity and persistent fever) and sufferers from meningitis. The second group comprise those affected with severe local tuberculosis which, however, did not seriously interfere with their general health. The order of this grouping corresponds also with the succession in relation to time of the cases treated.

We first treated a comatose child suffering from meningitis and administered small doses (two cubic centimetres) of serum. Even in the cases of meningitis which since that time we have treated with more appropriate doses of serum (40 cubic centimetres per day) the results were equally negative. Sometimes there was hope that the little patient might be saved. Some symptoms, as the increased pulse and respiration, improved distinctly, the paralysis seemed to diminish, the coma disappeared, the meningitis followed a course which was unusually prolonged even for this disease so fruitful in surprises, but the disappointment was always the same. Our failure may be ascribed to several causes. In the first place it is possible that the tuberculous toxin, in like manner with that of tetanus, for example, is firmly established in the cerebral cells at the time of the manifestation of the definite symptoms, in which case it would be impossible to dislodge the toxin and therefore impossible to act on the meningitis even with a serum superior to the one which is now at our disposal. On the other hand, it must not be forgotten that we always appeared on the scene too late, for we were never asked to give injections of serum before the seventh or eighth day, even on the tenth and twelfth day, after the beginning of the illness when all the symptoms of meningitis were fully displayed. There is reason to suppose that treatment commenced much sooner, during the long period of incubation or at the very beginning of the attack, might in some cases have succeeded in averting the fatal result.

We continued our endeavours with very advanced forms of pulmonary tuberculosis presenting large cavities, hectic fever, very extensive infiltration, and histories of many years' duration. In this way proceeding from the most severe cases associated with secondary infections and going on to those which were less advanced, less complicated, and not as yet in the stage of irreparable destruction of tissue, we have passed in review all the forms of tuberculous infection. We soon formed the opinion that the duration of the malady was a feature of the greatest importance. The courtesy of the physicians and surgeons of the Paris hospitals provided us with patients—a favour for which we are deeply indebted to them—and in the course of treating these patients our observations on the influence of the serum led us to the conclusion that the area of the lesion is much less important than its duration. Other things being equal, a lesion which although extensive is recent may be recovered from more quickly and easily than one which is much smaller but of long standing. Almost all the cases of pulmonary tuberculosis which we had to treat were in an advanced stage, with profuse expectoration, with numerous bacilli, very often with feverishness and general ill-health, and sometimes even with cavities.

The forms of tuberculosis which appear to us to be the most appropriate for these trials of a new method of treatment are the forms with which the surgeons have to deal. Being at the outset almost free from troublesome mixed infections the combination of obvious symptoms which they present is such that the results are hardly controvertible. Moreover, these forms are exceptionally favourable for the continuous observation of the effects of the serum treatment, for although we have not had the opportunity of treating many cases in the first stage we consider that as regards the importance of the lesions relatively to the whole organism very advanced cases of surgical tuberculosis correspond fairly well to the initial manifestations of pulmonary and laryngeal tuberculosis. It is for this reason that we attach some value to the results obtained in tuberculosis of the bones, the joints, the glands, and the bladder. With few exceptions all the cases treated by us were of long standing and had for the most part been subjected to a variety of remedial measures. The recovery of such cases after the administration of injections of serum apart from any other form of treatment almost gives to each case the force of a scientific demonstration and an experimentally verified fact.

In several cases of advanced pulmonary tuberculosis which we have had under our care there occurred a manifest and favourable influence not only on the patient's general condition, which improved greatly under the new treatment, but also on the lesions themselves. The amount of the expectoration and the number of the bacilli decreased progressively, the dyspnœa disappeared, and auscultation and percussion revealed a diminution of the areas of infiltration and softening. These cases justified us in predicting that patients in a less advanced stage of pulmonary tuberculosis and treated more perseveringly than the time at our disposal permitted would benefit still more by the serum treatment. Some recoveries which have occurred since that time have proved that this is so. We shall not at present do more than merely mention the important subject of mixed infection in which the streptococcus plays a leading part and in which the prognosis is evidently much less favourable. We are now engaged in endeavouring to elucidate this question.

Pleuritic effusion is a form of bacterial infection which may be considered as intermediate between pulmonary tuberculosis and so-called surgical tuberculosis. This acute disease shows by unmistakable signs the influence of the treatment. In seven cases of this kind (two of which occurred in little children) we found in six cases a rapid diminution of the effused fluid accompanied by very marked diuresis. We think it may be said that in these patients the serum produced a rapid and obvious improvement.

It remains for us to give a concise summary of the permanent recoveries which we have obtained in surgical tuberculosis. We have succeeded in effecting a complete cure of several cases of Pott's disease complicated either with fistula, with abscess, with intestinal perforation, or with palsy of the lower limbs. We have been able to bring about progressive diminution of glandular masses in the neck, the groin, and the true pelvis, as well as to procure the closing of fistulæ which had been open for a long time. In several cases we have observed that the pus at the seat of caseation was re absorbed without any surgical treatment. Multiple granulomata (*gommes*) of the skin, refractory for years to every remedial measure, rapidly dried up and closed. Several times on the obstinate refusal of fistulæ to close we were able to diagnose the presence of a sequestrum as the only cause of the persistence of the suppuration after the cure of the tuberculous process. This diagnosis, based on circumstantial inferences, was always confirmed by the results of operation.

One word on the practical application of the new treatment. It must not be forgotten that this is the first time that a serum has been employed as a remedy for a chronic disease. The serum must be injected in a sufficient quantity divided into several doses. The highest number of injections administered was 52; the lowest was seven in a case of tuberculous glands in the neck and six in a case of sternal fistula. With respect to the occasional inconveniences incidental to serum treatment those due to our serum are the same as, and not more frequent than, those produced by any serum of whatever kind. In about 2000 injections we have only observed a local abscess three times. The serum does not ordinarily give rise to either pyrexia or any disturbance, local or general. On the contrary, the hectic fever, especially that form which is due principally to absorption of tuberculous toxin and in a less degree to mixed infection, declines after several injections of serum. Pyrexia is in no instance a contra-indication for its use. We have even sought out such cases for the purpose of demonstrating on them the antipyrexial action of the serum. As for technical details we propose to give a full account of them on a future occasion.

Such are in brief the results of our work. And here I ask the Academy to allow me to refer to a personal matter. Attached to the Pasteur Institute for many years I find myself in a scientific sense out of harmony with the official heads of the institute in respect of several points in these researches. In order, therefore, to relieve the Pasteur Institute I have felt it to be my duty to resign my position as *chef de laboratoire* so that I may be alone responsible, morally and scientifically, for my work. We are quite aware that for the giving of a definite opinion on the value of our serum experimental evidence on a far larger scale than ours will be required. Investigations in this direction are being carried on in many places, even in foreign countries, under the control of competent clinical observers and some very encouraging results will be published immediately. Taken together with those obtained by us in the laboratory and those observed in many of our patients during more than a year they may justify the presentation of this memoir.

Paris.

# INOCULATION WITH HAFFKINE'S PLAGUE PROPHYLACTIC: A REVIEW OF 30,609 CASES.

BY CHARLES E. P. FORSYTH, M.B. ABERD., M.R.C.P. LOND.,

LATE INOCULATING MEDICAL OFFICER TO THE PUNJAB GOVERNMENT; LATE ASSISTANT MEDICAL OFFICER, EASTERN FEVER HOSPITAL, HOMERTON, N.E.

HAFFKINE'S plague prophylactic has been in use now for some years and a goodly number of reports exist as to its efficacy in reducing both the attack-rate and the case mortality of the disease. The scheme instituted last season, 1902-03, by the Punjab Government for the carrying out of inoculation against plague on a grand scale was not by any means the success which had been hoped for or anticipated. But even in its limited success it will doubtless afford further evidence of the value of the prophylactic when the whole mass of accumulated statistics comes to be officially published. The figures given here are arranged from a total of 30,609 inoculations with Haffkine's prophylactic performed by me while acting as one of the medical officers appointed with reference to the above-mentioned scheme. Deductions from them would seem to point a very strong case in favour of inoculation as an agent in stemming the disease which works such havoc throughout India. Actually the figures may fairly be said to do so, though for a variety of reasons the deductions drawn can only be imperfect. Absolutely reliable statistics are very hard to obtain and this is not surprising when one considers the way in which the plague returns are compiled. The primary agent in the matter is the "*patwari*" or village registrar. With him rests the question of diagnosis, and he also reports as to the fact of inoculation in each individual plague case or death from plague which he returns from his village. The question of diagnosis must necessarily be obscure, not so much perhaps in the bubonic form of the disease (fortunately the most common), but certainly so in the other types, yet it is fair to suppose that this rights itself to some extent—actual cases of plague that have been missed making up for those wrongly notified as such.

As to the fact of inoculation a good degree of accuracy can be reached. This is checked by the comparison of the *patwari's* return with the inoculating officer's register. Every person at the time of his inoculation receives a certificate with his full description as to name, caste, &c. A duplicate of this is retained and entered in a register. A plague return being verified, an additional entry is made stating the date and type of attack with its result, whether recovery or death. The figures under notice will have some disadvantages which will be mentioned as they present themselves.

TABLE I.—*Giving the Plague Statistics in the whole Number of Inoculations performed—30,609.*

| Number attacked by plague. | Deaths. | Case mortality (per cent.). |
|---|---|---|
| 329 | 50 | 15·1 |

Attacks or deaths returned after the closure of the figures (May, 1903) should be allowed for, but these must be few, if indeed any, as the epidemic in the district dealt with had then undergone its usual seasonal decline.

The reduction in the case mortality—a reduction to 15·1 per cent. in a disease in which it may reach 70, 80, or 90 per cent. and is usually about 50 per cent.—is worthy of note. Determination of the attack-rate is here of no value owing to the distribution of the population with the varying conditions of surroundings and exposure to infection. Included in these 329 are some cases which obviously had been inoculated whilst in the incubation stage of the disease, as will be seen in Table II. which gives particulars of the attacks occurring from one to 30 days after inoculation.

TABLE II.—*Time after Inoculation in 76 Cases with 16 Deaths.*

| Time after inoculation. | Number of cases. | Deaths. | Case mortality (per cent.). |
|---|---|---|---|
| 1 to 7 days ... ... | 19 | 6 | 31·5 |
| 7 ,, 14 ,, ... ... | 9 | 1 | 11·1 |
| 14 ,, 21 ,, ... ... | 14 | 2 | 14·2 |
| 21 ,, 30 ,, ... ... | 34 | 7 | 20·5 |

The average case mortality here—21 per cent.—is somewhat higher than in the whole number of cases, yet it is still comparatively low—a fact going to confirm the present belief that the prophylactic, far from doing harm, really tends to do good when given after infection, a belief contrary to that expressed by the Indian Plague Commission (1898-1900). An important question is the length of time for which protection is conferred by the inoculation of the prophylactic. It seems very uncertain, but the minimum period has been given on good evidence[1] as about three months. Its determination is difficult indeed in dealing with large numbers and the present figures, as will be seen in Table III., unfortunately can throw no light on the matter.

TABLE III.—*Time of Attack after Inoculation in 329 Cases with 50 Deaths.*

| Time of incidence of attack of plague after inoculation. | Cases. | Percentage of cases to total. | Deaths. | Case mortality (per cent.). |
|---|---|---|---|---|
| 1 month and under... ... | 76 | 23·1 | 16 | 21·0 |
| 1 to 2 months ... ... ... | 92 | 27·9 | 14 | 15·2 |
| 2 ,, 3 ,, ... ... ... | 83 | 25·2 | 13 | 15·6 |
| 3 ,, 4 ,, ... ... ... | 35 | 10·6 | 4 | 11·4 |
| 4 months and over... ... | 43 | 13·0 | 3 | 6·9 |

To obtain proper data in this respect it would seem necessary to observe a proportion of inoculated individuals living in a small community under constant conditions of infection for a lengthy period, and this circumstances rendered impossible. From the figures given it might almost appear as if the nearer the time of inoculation the greater the liability to attack. The apparent contradiction to accepted views may perhaps be explained to a large extent by reference to Table IV., where it will be seen that the height of the epidemic (cf. Table V. for number of villages declared infected) corresponded in time to the period when the proportion of inoculated persons was at a maximum.

TABLE IV.—*Inoculations (30,609) and Attacks (329) arranged as to Months.*

| Month. | Number of cases of plague amongst inoculated. | Number of inoculations performed. |
|---|---|---|
| October ... ... | *Nil.* | 2380 |
| November ... ... | 2 | 2604 |
| December ... ... | 4 | 1525 |
| January ... ... | 6 | 8367 |
| February ... ... | 27 | 8209 |
| March ... ... ... | 122 | 6839 |
| April ... ... ... | 168 | 685 |

The nearer the figures can be confined to a limited population living under the same conditions the greater the value of the inferences that may be drawn from them. Thus in Tables V. and VI. an attempt at further accuracy has been made. The statistics have here been fined down to those obtained from a group of 50 villages, all situated in the Garhshankar Tahsil of the Hoshiarpur district of the Punjab. These villages were declared infected at varying times from October, 1902, to March, 1903, and inoculation was carried on in the group immediately prior to and during

[1] Report on Inoculation in the Punjab, 1899-1900: Wilkinson.

the worst state of the epidemic. These points are shown in Table V.:—

TABLE V.—*Showing in the 50 Villages the Period of the Epidemic when Inoculations were Performed.*

| Months. | Number of villages declared infected. | Number of villages inoculated for the first time. | Number of inoculations performed. |
|---|---|---|---|
| October ... ... | 5 | 0 | 0 |
| November... ... | 5 | 2 | 2396 |
| December... ... | 6 | 2 | 166 |
| January ... ... | 4 | 19 | 5363 |
| February ... ... | 17 | 22 | 3630 |
| March ... ... | 13 | 5 | 1341 |
| Totals... ... | 50 | 50 | 12,886 |

None of these villages had been declared to be free from infection at the end of March, 1903. They have a total population according to the latest census returns of 44,760 and in them from November, 1902, to March, 1903, inclusive 12,886 inoculations were performed, distributed as to time as shown in Table V.

Thus the total population may be divided into the two classes of uninoculated, numbering 31,874, and inoculated numbering 12,886, both classes living approximately under the same conditions as regards surroundings and risk of infection.

In Table VI. the relative behaviour of these two classes towards plague is set down.

TABLE VI.—*Showing the Relative Behaviour of Uninoculated and Inoculated Persons towards Plague.*

| Classes. | Number in each. | Cases of plague. | Attack-rate per cent. | Deaths. | Death-rate per cent. | Case mortality per cent. |
|---|---|---|---|---|---|---|
| A. Uninoculated | 31,874 | 1457 | 4·5 | 659 | 2·06 | 45·2 |
| B. Inoculated ... | 12,886 | 171 | 1·3 | 29 | 0·22 | 16·9 |

The percentage of the inoculated to the total population was 28·7. A slight error lies in the fact that some few persons were inoculated twice; these were certainly under 1 per cent. of the whole. From this it is evident that Class B (the inoculated) have a decided advantage over Class A (the uninoculated. In Class B the attack-rate of plague is over one-third—nearly one-fourth—of the attack-rate in Class A, the death-rate is one-tenth, and the case mortality is reduced by nearly 30 per cent. In this series of cases the usefulness of the measure would appear to be established and as to its freedom from ill-effects it may be stated that in the whole number of 30,609 inoculations no serious consequences came to light. To speak more exactly abscesses developed in 16 cases at the site of inoculation. 15 of these were traced to one particular bottle of the prophylactic which had become contaminated in some unknown way. The remaining abscess was the only accidental one reported. It may be said with some safety that there were no others, as the people are not at all backward in reporting anything of the kind, and beyond these few septic complications, none of which were ever serious, there were no ill-effects known. The technique recommended by M. Haffkine was adopted throughout, with some little variations suggested by local circumstances, and the almost complete absence of communicated sepsis is, indeed, surprising as well as satisfactory when one considers the very unclean habits of the majority of the people dealt with. In estimating the amount of good done by the prophylactic it must always be assumed that a dose had been given sufficient to insure a good reaction. The utmost importance of this is a matter of firm belief with the writer. The mere inoculation of a number of people exposed to plague with an uncertain small dose of prophylactic gives no criterion of its usefulness. It must be given in a dose that may be reasonably expected to protect against possible infection. The only test of this is the production of a distinct reaction with a temperature of probably at least 102° F. in each individual inoculated. Stress is laid upon this owing to the small attention actually paid to it in the carrying out of the Punjab scheme. The systematic taking of temperatures was indeed recommended in the official instructions and strongly urged personally by M. Haffkine that it should be done in as large a percentage of cases as possible—10, 20, and 30 hours after inoculation—with a preference to the ten-hour record and the future dose modified accordingly. This is undoubtedly the right course and all the more important in that the prophylactic itself can be only imperfectly standardised, but in my experience at least it was found impossible to carry it out except in a very limited way. This was always a matter of regret, but it was not possible to do more than was done with the allotted staff owing in large part to the number of inoculations performed and to the distance that had to be covered daily.

The plan followed by me to obtain approximate results for future guidance was to get personal reports from each village as to the general state of the people after inoculation. This method, though scientifically useless, was practically of great value in aiding the determination of a dose satisfactory in its reaction but still not powerful enough to make the people afraid of coming forward. It should be recognised how very important it is to educate the people not only to accept inoculation, but also to be dissatisfied with it unless it produces a pronounced reaction. Though the first point is being surely gained—true, in the writer's experience at least—the second is scarcely understood at all. The people come for inoculation, but naturally, in their ignorance, are glad to escape with the minimum of discomfort. This being so, and so long as the individual dose remains uncertain, just so long will Haffkine's prophylactic fail to give the very great protection against plague which it undoubtedly does give under proper circumstances. With perseverance in inoculation and common-sense methods of disinfection and segregation properly and correctly carried out the disease in India would be stayed. The curiously spasmodic and half-hearted measures unfortunately so common can accomplish nothing and can only mean failure. Acknowledgment is due to Captain M. Corry, I.M.S., for access to his registers. In this way it was possible to obtain the plague figures in Table VI.

Albion-road, N.

## SOME OBSERVATIONS ON OVER 6000 INOCULATIONS AGAINST PLAGUE.

BY J. W. MILLER, M.D. VICT., D.P.H. CANTAB.,
LATE PLAGUE MEDICAL OFFICER, PUNJAB, INDIA.

THE above inoculations were done in the Punjab during 1902 and 1903. Haffkine's prophylactic was used throughout and was supplied in bottles containing 30 cubic centimetres, the maximum dose being from 5 to 7·5 cubic centimetres. A 20 cubic centimetre syringe was used and this as well as the needles used were first sterilised by drawing up oil heated to a temperature of 160° F. into the syringe and leaving the heated oil in contact for a few minutes; the oil was heated by a spirit lamp and this method of sterilisation was found to be very useful as it was rapid and did not take as long as disinfection by boiling. The needles were left in a vessel containing the heated oil for a few minutes; a little of the prophylactic was drawn up into the syringe to wash the oil away before filling it.

The left arm was chosen for inoculation for the sake of convenience and as causing less pain and inconvenience afterwards to the person inoculated. The arm could easily be kept at rest and did not necessitate the patient being kept in the recumbent position, which would have been the case had inoculation been performed in the abdomen or the groin. In some cases inoculation was performed in other situations at the request of the person to be inoculated, a common site being in the situation of the knee, the hip-joint, and shoulder-joint, the idea being that rheumatism and other pains would be cured, and there is no doubt that the counter-irritation produced by the inoculation does in many cases relieve pain. Before inoculation the upper and outer parts of the arm were washed with soap-and-water. This was especially necessary, as a large number of individuals came straight from their work in the fields to be

inoculated. Some 1 in 20 solution of carbolic acid having been applied to the outer part of the arm with a piece of lint, the prophylactic was then injected and the site of inoculation again washed with the solution of carbolic acid.[1]

The dosage was regulated as follows, according to Haffkine: from one to two years, one-fifth of the maximum dose; from two to five years, two-fifths of the maximum dose; from six to 11 years, three-fifths of the maximum dose; from 12 to 15 years, four-fifths of the maximum dose; from 15 to 60 years, the full dose; and from 60 to 70 years, three-fifths of the full dose. Infants under one year of age were not inoculated nor were old persons if at all weakly. Old people and infants under one year of age are the least susceptible to plague and when inoculated usually react slightly. Some care must be taken when inoculating pregnant women. Up to eight months two-thirds of the full dose can safely be given, at nine months one-half the full dose, and if plague be present in the locality the half dose should be repeated within ten days after the first inoculation. I performed at least 100 inoculations of pregnant women and on no occasion did any bad effect follow. Women were usually given four-fifths of the full dose and weakly persons were given smaller doses. Children stand inoculation well and there need be no hesitation in inoculating children from one year of age upwards.

The symptoms produced after inoculation are as follows. Aching begins at the site of inoculation a short time after the operation and gradually increases so that as early as one hour after inoculation some pain is felt on movement and in addition some stiffness and a feeling of heat in the arm. These symptoms gradually become more marked and usually the local symptoms are most pronounced the first evening after inoculation, assuming that the person has been inoculated in the morning. A rise of temperature is perceptible a few hours after inoculation.

The temperature was taken in 300 cases at intervals varying from one hour to some days afterwards. In the majority of the cases the temperature had reached 100° F. five to seven hours after inoculation and gradually rose and usually reached its height from 10 to 11 hours afterwards. In 8 per cent. the temperature 10 hours after was between 102° and 103°; in 22 per cent. it was between 101° and 102°; in 34 per cent. it was between 100° and 101°; in 25 per cent. it was between 99° and 100°; and in 11 per cent. it was between 98° and 99°. Ten hours after inoculation the rise in temperature is accompanied by severe frontal headache, anorexia, nausea, and a feeling of coldness in the majority of the cases. In a certain percentage of the cases no rise in temperature was perceptible although headache, faintness, and a feeling of malaise were present. At this stage there are swelling of the arm, feeling of weight and pain on movement, and some throbbing. The local symptoms increase during the first night. In the morning there is less headache and the temperature has fallen. Out of a large number of cases in which the temperature was taken on the following morning, about 20 hours after inoculation, it was found that the temperature averaged from 99° to 100° in those cases where the temperature the preceding evening had not been over 101° and between 100° and 101° if the temperature the previous evening had been over 101°. A little fever was usually present on the second evening after inoculation, but less than on the previous evening, and on the third evening after inoculation the temperature was usually normal. On one occasion where 400 persons had been inoculated two days previously out of 40 temperatures taken in only four was there any rise and in these cases the temperatures were between 99° and 100°.

The day after inoculation the arm is swollen, there are some œdema, tenderness on pressure, and some enlargement and tenderness in the glands of the axilla, but less pain in the arm than on the previous evening. Some erythema uniform in character is now generally present around and over the site of inoculation, extending upwards and downwards in some cases as far as the elbow; sometimes there is redness encircling the arm. This erythema lasts a few days and gradually fades away. The swelling and all tenderness have usually disappeared a week after inoculation, although some induration sometimes remains at the site of inoculation, but this gives rise to no inconvenience. In a few cases the raised temperature and other symptoms may last five or six days, but in the majority of the cases the symptoms subside the day after inoculation. A good many of the persons inoculated followed their employment on the following day without any ill-effect, although the swelling of the arm is increased thereby.

If care is taken in sterilising the syringe and needles no bad effects will result. Out of over 6000 persons inoculated in only one case did an abscess occur and in this case no ill-result followed. The average number of doses in a bottle was five; if the bottle was not used after being opened within half an hour the contents were thrown away. It is better not to recork a bottle as there is danger of organisms from the air growing in the broth although a good many are inhibited by the presence of 0·5 per cent. carbolic acid in the prophylactic.

Wakefield.

[1] The Punjab Government Plague Manual.

## SYMPTOMATIC PAROTITIS FOLLOWING STRANGULATED HERNIA.

BY FREDERICK B. JEFFERISS, F.R.C.S. EDIN., M.R.C.S. ENG., L.R.C.P. LOND.

ON Nov. 21st, 1903, I was called to see a woman, aged 68 years, complaining of vomiting and found her to be suffering from the effects of strangulation of an umbilical hernia of some years' duration. Her acute symptoms, including fæcal vomiting, had existed for about ten hours when I saw her. Taxis failing to reduce the hernia an operation was suggested but it would not be agreed to then. The usual palliative remedies were used in such a case without relief. On the following morning I saw the patient again and, finding her condition to be grave, I advised operation as her only chance.

The anæsthetic used was chloroform. After some trouble with adhesions the strangulated bowel was isolated from the scanty sac; it was in good condition, and after dividing the somewhat tense strangulating tissues round the neck I returned the bowel, removed a quantity of redundant fat and skin, and closed the wound with deep and superficial catgut sutures, drainage being provided.

I saw the patient the same night and found her general condition to be very good and her temperature to be normal. She had passed flatus but was troubled with a cough, she being a subject of chronic bronchitis. There were some retching and slight sickness, due probably to the chloroform. On the morning of Nov. 23rd I changed the dressings and removed the drainage. The patient was very comfortable. The pulse and the temperature were normal and the wound was looking well. On the 24th everything was satisfactory with the exception that she complained of pain below her right ear. On the 25th she was not looking at all well: there was much dyspnœa and the temperature was 103° F., with a rapid pulse and dysphagia. The region of the right parotid gland was very much swollen and acutely inflamed and the mouth could not be opened wide enough to examine the fauces. The tongue was moist and clean. There were no abdominal symptoms and no sickness or retching. The parotid swelling was treated with fomentations and belladonna and opium liniments, but the swelling spread rapidly until the socia parotidis could easily be felt and the submaxillary gland on the same side became involved.

The parotitis caused the patient much anxiety and distress and deglutition was almost impossible. The respirations were 40 to the minute and their rate was not only due to the bronchitis but seemed to be greatly due to the very extensive parotitis. Death ensued early in the morning of the 26th, five days after the operation and about 24 hours after the onset of the parotitis.

The interest in this case is mainly the unfortunate complication of parotitis which undoubtedly led to the fatal issue, for although the woman was the subject of chronic bronchitis and weighed close upon 15 stones her progress was so satisfactory for two days following the operative interference that one feels quite justified in assuming that her death was due to the severe and rapid inflammation of the parotid gland.

In most surgical works parotitis is mentioned as a rare sequela of abdominal disease or laparotomy wound and Stephen Paget has called special attention to it

Chatham.

# EOSINOPHILIA IN BILHARZIA DISEASE AND DRACONTIASIS.

BY ANDREW BALFOUR, M.D., B.Sc., M.R.C.P. EDIN., D.P.H. CAMB.,
DIRECTOR, RESEARCH LABORATORIES, GORDON COLLEGE, KHARTOUM.

IN THE LANCET of Oct. 10th, 1903, p. 1009, there is an article by Captain S. R. Douglas, I.M.S., and Major F. W. Hardy, R.A.M.C., on 50 Cases of Bilharzia Disease in which they give an account of the results obtained by them in the differential leucocyte counts. Their very complete and interesting investigation was apparently instigated by Coles's observations[1] on one case of bilharzia disease in which he found an increase of coarse-grained eosinophile leucocytes. His case was that of a young Englishman in whose blood he discovered 20 per cent. of these cells instead of the normal 7 per cent. (Hayem). With a view to confirming Coles's solitary observation I proceeded in my spare time to examine the blood of the few bilharzia cases I could obtain in Khartoum and Omdurman. Bilharzia disease, so far as is known, does not occur in the Egyptian Sudan save amongst those who have acquired the infection in Egypt or elsewhere, and owing to this and other reasons I was only able to examine three cases. At the same time I thought it well to investigate the blood condition in dracontiasis. At the time I began to do so I believe no work had been accomplished on this subject, but while I was thus employed a paper[2] appeared by Dudgeon and Child recording their results in one case of guinea-worm disease in an Englishman infected in India and resident in London. They found from 13·0 to 18·4 per cent. of coarse-grained eosinophiles present and suggest that in this respect dracontiasis may occupy a position midway between trichiniasis and infections with other internal parasites. I have notes on six cases of guinea-worm disease and had intended collecting further statistics before publishing any account of them, but as I find my results confirm theirs in large measure I think it well to place them on record, especially as some time must needs elapse before I can add materially to my number of cases.

*Method.*—In each instance I counted 500 leucocytes and in nearly every case made a double examination, one film being stained by Jenner's method and the other by the Leishman-Romanowsky. The counts were found to approximate very closely and that obtained in the better-stained film was taken as correct. In several instances also other confirmatory counts were made. In differentiating large mononuclears from lymphocytes I followed the plan adopted by Captain Leonard Rogers and classed every single unlobed nucleated corpuscle as large as, or larger than, a polymorphonuclear as a large mononuclear. Like Captain Delany, I preferred to place transitional forms under the heading polymorphonuclears, but I see that Dudgeon and Child counted them as lymphocytes.

*Table of results.*—For convenience of reference I place the accepted normal percentages in the table (Table I.).

TABLE I.—*Cases of Bilharzia Disease.*

| No. | Cases. | Remarks. | Percentage of various leucocytes. | | | | |
|---|---|---|---|---|---|---|---|
| | | | Eosinophiles. | Polymorphonuclears. | Lymphocytes. | Large mononuclears. | Basophiles. |
| — | — | Normal. | 4-7 | 70-75 | 15-25 | 6-8 | 0·5 |
| 1 | Bilharzia of the rectum. | Egyptian soldier, Omdurman. | 18·0 | 49·0 | 12·6 | 20·4 | — |
| 2 | Bilharzia of the rectum. | Egyptian soldier, Omdurman. | 14·0 | 28·6 | 46·4 | 11·0 | 0·6 |
| 3 | Bilharzia of the bladder. | Egyptian soldier, Omdurman. | 18·4 | 35·8 | 33·6 | 12·2 | 0·2 |

It will be seen that there was a very decided increase of coarse-grained eosinophiles and though the number of cases is very small, too small to furnish any definite conclusions, it is interesting to observe that the average percentage works out at 16·8, while in Captain Douglas's and Major Hardy's 50 cases it was 16·486. As is mentioned by them there is also a proportional diminution in the percentage of the polymorphonuclears and curiously enough in the one case (No. 1) in which there is a marked increase of the large mononuclears there is a diminution of the lymphocytes, a point to which they also draw attention. In the remaining two cases there is an increase in the lymphocytes.

TABLE II.—*Guinea-worm Cases.*

| No. | Case. | Remarks. | Percentage of various leucocytes. | | | | |
|---|---|---|---|---|---|---|---|
| | | | Eosinophiles. | Polymorphonuclears. | Lymphocytes. | Large mononuclears. | Basophiles. |
| 1 | Greek, Omdurman. | In foot; much induration. | 16·0 | 51·0 | 22·0 | 11·0 | — |
| 1a | Same man, Khartoum. | Worm had been wholly removed two weeks before this examination. | 15·2 | 42·0 | 27·8 | 15·0 | — |
| 2 | Egyptian soldier, Omdurman. | Worm had been wholly removed two days before examination. Induration was still present in the foot. | 13·4 | 52·8 | 24·4 | 9·4 | — |
| 3 | Sudanese, Khartoum. | In foot; malaria, but no rise of temperature. | 34·4 | 36·0 | 13·0 | 16·6 | — |
| 4 | Sudanese, Khartoum. | In foot; malaria, but no rise of temperature. | 36·6 | 31·2 | 16·4 | 15·4 | 0·6 |
| 5 | Sudanese soldier, Khartoum. | Double infection in the arm. One worm wholly removed and a portion of the other three weeks before examination. Probably malaria present. | 6·4 | 38·6 | 28·8 | 26·2 | — |
| 6 | Sudanese soldier, Khartoum. | In foot. Worm supposed to have been wholly removed, but ulcer and induration persisted. Probably malaria. | 10·8 | 27·8 | 39·6 | 21·8 | 0·6 |

There being, so far as I am aware, no other statistics with which to compare these results it is hardly worth while, with so few cases, to express the average percentage of eosinophiles or to discuss the relative numbers of the other forms of leucocyte. One point may, however, be raised. It is often a difficult matter to say if the whole of a guinea-worm has been extracted. Might the percentage of eosinophiles be taken as a guide in such cases? I have not been able to follow out a case through all its stages but the results obtained seem rather suggestive, and if this be so the differential leucocyte count would have a practical and useful bearing. It will be seen that Case 3 and Case 4 gave a much higher percentage of coarse-grained eosinophiles than did the case in London. Further observations are indicated to decide the usual amount of eosinophiles which one may expect to find in dracontiasis. I am much indebted to Dr. J. B. Christopherson, Omdurman, and to Captain Cummins and Sadek Effendi, E.M.S., for kindly placing cases at my disposal in the military hospitals at Omdurman and Khartoum and in the Prison Hospital, Khartoum.

Khartoum.

[1] Eosinophilia associated with Dracontiasis, Journal of Tropical Medicine, August 15th, 1903.
[2] Diseases of the Blood, Coles.

# FEVER AND CONVULSIONS DUE TO ASCARIDES.

BY ALBERT J. B. DUPREY, M.R.C.S. ENG., L.R.C.P. LOND.,
GOVERNMENT MEDICAL OFFICER, ST. LUCIA, WEST INDIES.

IT is interesting to find that "worm fever" and convulsions brought about by the presence of ascarides in the bowels are regarded as of rare occurrence. Grave symptoms and sometimes death from the harbouring of this parasite are, I venture to point out, of very frequent occurrence in

the West Indies. Not only in children but even in adults toxæmic symptoms are not infrequently produced by the presence of these worms which, presumably from the large quantity present, sometimes die and putrefy in the bowels, giving rise to a condition of blood poisoning closely resembling the typhoid state. This condition of ascarides is extremely common in these parts in children varying between the ages of two and ten years. So, therefore, it is always wise in treating children to start by administering a worm powder even if the disease is recognised to be some other, for the presence of worms in the intestines contributes in no small degree to the great irritability to which patients of tender age are prone in all diseases. Round worms are not always easy to expel, for often the large number present are knotted together and not infrequently give rise to symptoms of slight obstruction; at other times they are deeply embedded in mucus and no amount of santonin can get at them, so that the bowels are required to be freely active before the worms can be exposed and acted on by the vermifuge. In reading the letters published in THE LANCET[1] concerning this matter I recalled to mind a case of ascarides once under my care, the notes of which I have by me.

The patient was a fairly well-nourished boy, aged eight years, who was admitted to a hospital on July 27th, 1897, for fever and "bad bowels." He was unconscious; his pupils were widely dilated and the conjunctival reflex was present. The eyes were protruded and deviated upwards and to the right; his teeth were clenched. His bowels were loose and the motions were extremely offensive. The surface of the body was cold. The breathing was free; no abnormal sounds could be detected in the lungs. The heart beats were rapid but otherwise normal. He had several fits and on admission there were noticed twitchings of the right side of the face, the right arm and leg, and the left side of the mouth. The abdomen was much swollen and tympanitic. The pulse was quick and regular. His temperature on admission was 102·6° F. A rectal tube was passed but no flatus came away; a calomel and santonin powder was given and turpentine stupes were applied to the abdomen. Later in the day he was given three grains of acetanilid. At 5.45 P.M. his temperature registered 100·6° and he rallied somewhat, the teeth being less clenched, while the abdominal walls seemed to have become softer, but he was still in a stuporous condition. At 8 P.M. he passed a foul motion and was perspiring freely. The bowels were then washed with weak Condy's fluid—half an ounce in a quart of water. Ice was applied to the head. On the 28th there was some improvement since the previous day. The stupes were discontinued. The pulse and respirations were respectively 160 and 60 per minute, the skin was moist, and the temperature was 100·4°. At 6 P.M. the temperature registered 101·4°. The boy was still unconscious. There were constant movements of the head from left to right. The abdomen was less distended. One-eighth of a grain of calomel with sugar of milk was given every quarter of an hour for eight doses. On the 29th the patient was conscious in the morning and his temperature was normal but he was still very weak. The pulse was 140 per minute and regular. He passed a large and very offensive motion. Another large motion, black in colour, was passed about 11 P.M. The abdomen was flat and no tympanites was present. His aspect was dazed, the lips were dry, and there were sordes on the tongue and the teeth; the left thigh was flexed on the abdomen. He vomited and showed some restlessness. On the 30th he had two dark loose motions and was very restless. On the 31st he was rather poorly in the morning; there were sordes on his lips and teeth and his temperature was 103·8°. He had occasional twitchings of the right half of the body at intervals of four or five minutes; there was spasm of the right arm, the right hand being brought constantly towards the right iliac fossa and vigorous scratching movements were made as if to remove some great irritation. He was given a mixture containing four grains of hydrochlorate of quinine, four grains of bromide of potassium, five minims of infusion of digitalis, and five minims of dilute phosphoric acid to one ounce of water every three hours. Stimulants were prohibited at this juncture. He never rallied but died at 1 A.M. on August 1st.

At the necropsy the body was found to be emaciated and there was peeling of the epidermis over the abdomen. The lungs were normal, as were all the abdominal organs. Round worms were found in the intestines two—were in the ileum, one was occupying the vermiform appendix like a gloved finger with the hind end projecting into the cæcum, and six dead ones were in the large bowel. The mucous membrane of the bowels was in no wise diseased. On examining the brain the meninges were found to be normal, there was the usual quantity of cerebro-spinal fluid, and no gross pathological lesion could be discovered anywhere in the brain substance. The case was at first taken to be one of acute meningitis and it is interesting inasmuch as no explanation could be found to account for the symptoms with the exception of worms found in the bowels. The twitchings of the right arm and the scratching movements which were so marked were suggestive of great discomfort in the region of the iliac fossa, a symptom which, I think, is fully explained by the round worm found occupying the vermiform appendix where the irritation must have been very considerable.

St. Lucia, West Indies.

[1] THE LANCET, Sept. 26th (p. 898), and Oct. 3rd (p. 979), 10th (p. 1052) and 17th (p. 1119), 1903.

# Clinical Notes:

## MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

### DEFORMITY OF THE HEART IN THE MONGOLIAN IMBECILE.

BY CHARLES H. FENNELL, M.A., M.D. OXON., M.R.C.P. LOND.,
ASSISTANT MEDICAL OFFICER, DARENTH ASYLUM.

IN a paper read before the Clinical Society of London in 1893 and published in vol. xxxii. of the Transactions Dr. Archibald Garrod described five cases of Mongolian imbecility in which evidence of congenital malformation of the heart was present. All the patients were under three years old and Dr. John Thomson's wide experience was quoted as not including a child of more advanced years showing cardiac deformity. The suggestion was made that Mongolian imbeciles thus affected probably died in very early years. I have therefore thought it of interest to record three cases, varying in age from nine to 27 years, met with in the detailed examination of 23 of these imbeciles at Darenth Asylum.

CASE 1.—Male, aged 27 years, a very definite specimen of the type. He is a low-grade imbecile, in good health, and not at all anæmic. The area of cardiac dulness extends one and a half fingers' breadth to the right of the sternum; on the left side it reaches the nipple line. A to-and-fro murmur is heard in the upper three intercostal spaces on each side of the sternum, but best in the second left space and better along the left sternal border than the right. There is no cyanosis or clubbing and the patient has had no syncopal attacks; his heart works adequately and he is a useful ward helper.

CASE 2.—Female, aged nine years, a low-grade imbecile of well-marked Mongolian type. She is in fair health but subject to catarrh. The area of cardiac dulness extends one and a half fingers' breadth to the right of the sternum; its left limit is half a finger's breadth inside the nipple line. There is a diastolic bruit at the left base, replacing the pulmonary second sound and best heard in the second left intercostal space. No systolic bruit is audible. The child shows no cyanosis or clubbing but the circulation in her extremities is poor. She is rather torpid and inactive and has shown no signs of cardiac failure.

CASE 3.—Male, aged 13 years, whose imbecility is definitely Mongolian in type. He is a medium-grade imbecile in good health. The area of cardiac dulness is not increased towards the right; on the left it extends beyond the nipple line by a finger's breadth. A double murmur is present at the base and is heard better on the left side. There is a loud apical systolic murmur heard also all over the left chest and to a less extent over the right chest also. A systolic thrill is felt at the apex. There is no cyanosis or clubbing and the heart acts well. The boy is a poor walker but is learning to make himself useful.

It is well known that the presence of malformation of the

heart is often hard to determine during life. I have twice encountered it in necropsies on infant Mongolian imbeciles when it had not been suspected. Probably, therefore, it exists unrecognised in a larger percentage of adolescent cases than my figures would indicate.

Darenth.

## A CASE OF TRAUMATIC ANEURYSM OF THE FEMORAL ARTERY IN HUNTER'S CANAL.

BY JOHN CROPPER, M.D., B.C. CANTAB.

THE following case well illustrates many of the difficulties likely to be met with in a large traumatic aneurysm.

A man, aged 25 years, a peasant, was admitted to the English Hospital of the Church Missionary Society Medical Mission at Nablus, Palestine, on June 22nd, 1903, for traumatic aneurysm of the right femoral artery. It had been caused by a punctured wound inflicted four months before. The patient, who was considerably under five feet in height, was otherwise strong; though unable to do his work he had walked to the hospital from his village (Hawûrah), several miles distant. He had a good deal of pain.

On admission the aneurysm was found to occupy the inner aspect of the middle third of the thigh; pulsation was well marked, a loud bruit was present, and thrill was easily felt. There was nothing to show whether the aneurysm arose from the main vessel or from a small branch in close contiguity with it. Chloroform having been administered an incision was made down to the sac through the cicatrix which was over the inner border of the sartorius, the sac was opened and clots of blood were turned out to the amount of about a pint. On exploration with the finger, the tourniquet being relaxed, the mouth of the sac could be felt to communicate directly with the main vessel under the muscle and hæmorrhage was easily controlled by the finger. A second incision was then made to the outer side of the sartorius, where by pushing up the sac from the former incision the femoral artery was with some difficulty made out owing to the matting of the tissues. The artery was of comparatively small size from establishment of the collateral circulation but it had the usual relations; it was tied in two places an inch apart, above and below the mouth of the sac, which latter was excised. On finally relaxing the tourniquet the vein was found to have been wounded and, being difficult to secure, hæmorrhage was controlled by firm packing with iodoform gauze. The sac was drained from below. At no time after the operation was there any coldness of the leg which was well raised during the first four or five hours and, indeed, until the patient complained of a good deal of discomfort. The temperature did not at any time exceed 99° F. On the fourth day, feeling quite well, he got up and walked to the lavatory when no one happened to be looking but in spite of this he made an uninterrupted recovery. The gauze was removed on the sixth day; there was then slight discharge from the sac but at no time was there any fever and he went home on the twenty-ninth day from the operation

Nablus, Palestine.

VENTILATION.—On Tuesday, Dec. 8th, the directors of Spiers and Pond, Limited, invited a numerous company to dinner at the Criterion Restaurant to inspect alterations and redecorations of certain of the rooms of the building, and more especially perhaps to test the effect of the ventilation of the "King's Room" in which the dinner took place. The system of ventilation adopted is that designed by Dr. T. Glover Lyon, the details of which have already been fully described and commented on in our columns (see THE LANCET, March 1st, 1902). The result appeared to give general satisfaction, there being plenty of air diffused throughout the room during dinner, and although some 80 persons were present in a room 52 feet in length by 24 feet in width the after-dinner tobacco smoke was certainly very much less noticeable and aggressive than it would have been under ordinary conditions. The occasion was a pleasant one, the conjunction of an excellent dinner, a menu which declared in bold type "No speeches," and a well-ventilated room not being an every-day experience.

# A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

## ROYAL FREE HOSPITAL.

### A CASE OF PYÆMIA (SEPTICÆMIA) SIMULATING ACUTE RHEUMATISM.

(Under the care of Dr. H. SAINSBURY.)

FOR the notes of the case we are indebted to Mr. John A. West.

A lad, aged 16 years, was admitted into the Royal Free Hospital on Jan. 13th, 1903, complaining of pain in the right knee and in the left side of the chest. He had been an out-patient since the 3rd with pains first in the right and then in the left knee. The pain subsequently disappeared from the left knee to return to the right. Before the 3rd he had been quite well. The pains had not been entirely confined to the joints but had extended somewhat along the limbs. There was no previous history of chill and none of rheumatic fever. On admission the temperature was 102 6° F.; the right knee was swollen, hot, and painful, the tenderness extending down the back and the outer side of the leg; the tongue was furred and the urine was thick with urates. Examination of the chest gave no explanation for the pain complained of in the left side of the chest. There was a systolic bruit at the apex of the heart which was conducted into the axilla, but no evidence of dilatation or hypertrophy. There was no urethral discharge. In spite of salicylates (including aspirin) the fever persisted; it was very broken in type, remittent or intermittent, the maxima reaching from 102° to 103°, and on one occasion 104°. There were no rigors and no sweatings. Slowly the fever subsided, the temperature reaching the normal about the 31st. On Feb. 5th a recrudescence of the fever occurred, but at a lower level, except on the 5th when the temperature reached 105°. The left knee now became affected. Again the fever subsided till the 10th, when a fresh recrudescence appeared with a return of pain and swelling in the right knee. 14 days of irregular pyrexia followed, during which the left ankle became painful. From the 28th to March 9th the temperature was nearly normal. It then began to oscillate up to from 100·5° to 101°. Between March 10th and the 13th a swelling gradually made its appearance on the inner side of the right thigh just above the joint. During the prolonged pyrexia, examination by the Widal and Ehrlich diazo reactions gave negative results and examination of the blood gave no cultures. No enlargement of the spleen was detected. Mr. E. W. Roughton diagnosed an abscess under the muscles of the thigh and on opening it was able to trace it to a sequestrum in the lower end of the femur. After the operation the boy slowly recovered.

*Remarks by* Dr. SAINSBURY.—With so definite a local cause it is of interest to note the multiple and shifting arthritis (both knees and the left ankle), and to note, moreover, that the swelling in the left knee was quite as severe as that in the right. In each knee, indeed, the swelling was on occasion considerable with well-marked fluctuation. The diagnosis of acute rheumatism made on admission was strengthened by the presence of a systolic bruit at the apex, but the resistance to salicylates made one suspect that the case might prove to be septic. In the absence of a urethral discharge or of any obvious site of infection, in the absence also of a blood culture, it was impossible to make a more definite diagnosis. Quinine in full doses made no impression and the only treatment which seemed to influence the joints was blistering. This appeared on more than one occasion to lessen the pain and the swelling. The case resembles closely Dr. Moxon's case of pyæmia simulating acute rheumatism recorded in 1877 and described in Fagge[1]

[1] First edition, vol. ii., p. 550.

and in relation to modern views as to the dependence of the rheumatic group on sepsis of one kind or another it is not without interest.

## ROYAL ALBERT HOSPITAL, DEVONPORT.

PAROVARIAN CYST WITH TWISTED PEDICLE.

(Under the care of Dr. ALONZO G. RIDER.)

FOR the notes of the case we are indebted to Mr. H. M. Major, assistant house surgeon.

The patient, a multipara, aged 40 years, was admitted into the Royal Albert Hospital, Devonport, on Oct. 29th, 1903, with the following history. About 2 A.M. on this date she was suddenly seized with violent pain in the right iliac region, accompanied by bilious vomiting and faintness. She was sent to the hospital and on admission her temperature was 101° F. The pain was paroxysmal, starting in the right iliac region, spreading over the lower part of the abdomen, and extending into the right groin over the hip and down the outer part of the thigh. Vomiting ceased soon after admission. Examination revealed a globular swelling situated a little to the right of the median line evidently containing fluid and reaching a finger's breadth above the umbilicus (it simulated exactly a distended urinary bladder). Vaginal examination showed that the uterus was drawn up and that the swelling sprang from the neighbourhood of the right tube.

Three years previously the patient had noticed some enlargement of the abdomen on the right side and tenderness over a similar area. About three weeks later, while at her house work, she had a sudden attack of pain in the right side which lasted two or three days. There was no vomiting and the bowels were regular in their action. Since then there had been several similar attacks at various intervals but with increasing severity and frequency. The attacks did not coincide with menstruation. In May, 1902, an attack occurred of much greater severity which lasted seven days. Frequent vomiting occurred during the attack. In the following June she was delivered at term of a child—a breech presentation. She had another severe attack in November, 1902. In April, 1903, she had another child at term, again with a breech presentation.

On opening the abdomen through the right rectus a quantity of blood-stained fluid escaped from the peritoneal cavity. The peritoneum showed signs of old inflammation and was very much thickened. The cyst was emptied of about one and a half pints of bloody fluid. On tracing it down to its pedicle it was found to be twisted twice (the rotation having taken place from left to right). The right tube and ovary were lying on its anterior surface at the lower portion. The tube was filled with recent clot and the fimbriæ were glued to the cyst wall by a large clot. There was a considerable clot of recent blood in the right mesometrium. The cyst was unilocular and its wall, which was over one third of an inch in thickness, was composed of laminated blood clot. Microscopic examination of the wall showed it to be (according to the report of the Clinical Research Association) "chiefly composed of blood clot which is undergoing organisation on one side and has a fibrous capsule on the opposite side. There are no traces of ovarian tissue or of unstriped muscle." Dr. G. F. Blacker, University College Hospital, London, very kindly examined the specimen and reported it as "an interesting case of parovarian cyst with twisted pedicle—a rare thing." The abdominal wound healed by first intention and the patient made an uninterrupted recovery.

ROYAL ALBERT HOSPITAL, DEVONPORT.—The annual meeting of the governors of the Royal Albert Hospital, Devonport, was held on Oct. 30th, under the presidency of Admiral Sir E. Seymour. The annual report stated that for the 12 months ended Sept. 30th 659 in-patients had been admitted, an excess of 60 compared with the preceding year. The average daily number of patients was 42·64. There were 85 women treated in the lock ward up to May 1st, on which date the ward was closed, as the Admiralty declined to continue further their contribution to its support. 164 patients and nurses had been sent to the Pearn Convalescent Home. The financial statement showed that the total cost of maintenance was £4389, compared with £5240 in the previous year, and the unfavourable balance of £1866 with which the year commenced had been reduced to £537.

# Medical Societies.

## ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

*Artificial Respiration in the Human Subject.*

A MEETING of this society was held on Dec. 8th, Mr. A. WILLETT, the President, being in the chair.

In Professor E. A. SCHÄFER'S absence the secretary read a description of a Simple and Efficient Method of performing Artificial Respiration in the Human Subject, especially in cases of Drowning, to which were appended instructions for the treatment of the apparently drowned. The mechanical methods of performing artificial respiration in the human subject which had been most in use up to the present time were: (1) the Marshall Hall method, which consisted in placing the subject upon his side and rolling the body alternately into the prone and back again into the lateral or latero-supine position; (2) the Silvester method, in which the capacity of the chest was increased by raising the arms above the head and thus dragging upon and elevating the ribs, the chest being emptied by placing the arms against the sides of the chest and exerting lateral pressure on the thorax; the subject was throughout in the supine position; and (3) the Howard method, which consisted in emptying the thorax by forcibly compressing the lower part of the chest with a slight upward push so as to raise the lower ribs; on relaxing the pressure the chest again filled with air. The subject was throughout in the supine position. It had been shown that all these methods were efficacious in effecting a normal amount of air exchange in the healthy living human subject, but each one of them was attended by certain disadvantages which became accentuated when the subject was in an asphyxiated condition and especially when the asphyxia was due to drowning. For in these circumstances all the muscles were in a limp relaxed condition; when the head was thrown back, as when the subject was supine, there was a tendency for the tongue to fall back into, and to block, the pharynx; there might be water in the air passages, and an abundance of mucus was usually secreted, which becoming churned up into a froth with the air and water tended to block the air passages. There was also an enormous congestion and swelling of the liver, combined with, and caused by, great distension of the heart, especially of the right cavities. This last-named circumstance—viz., the congestion of the liver—rendered the application of the Howard method extremely dangerous in cases of drowning, since forcible pressure upon the lower chest under these conditions was apt to produce rupture of the liver, an accident which occurred on several occasions in the dogs experimented upon by Dr. Herring and Professor Schäfer in their investigations into this subject for the committee of the Royal Medical and Chirurgical Society. The supine position was strongly contra-indicated (1) on account of the tendency which there was in this position for the tongue to fall back, and (2) because this position did not facilitate but rather hindered the escape of the water, mucus, and froth from the air passages, throat, and mouth. The Marshall Hall method had not these disadvantages but it involved a large amount of physical labour, and the rolling of a heavy inert body over upon hard ground or upon the planks of a boat might easily produce bruising and superficial injuries which it should be their endeavour to avoid. The Silvester method, besides the objection that it involved the supine position, an objection which was peculiarly applicable to drowning cases, also demanded a considerable amount of physical exertion, and the dragging upon the humero-thoracic muscles tended to strain and otherwise to injure them. From the physiological point of view there was a fundamental difference between the Silvester method on the one hand and the Howard method on the other, since the Silvester method was active in producing inspiration while expiration was passive, whilst in the Howard and other pressure methods expiration was produced actively and inspiration was passive. Since the former appeared more exactly to imitate the normal conditions of respiration it might at first sight be supposed on that account to be preferable, but there was another element to take into consideration—viz., the part which was played by the nervous centre of respiration. For

it had been shown (by Herring and Breuer and by Head) that a main factor in exciting inspiration was the emptying and concomitant collapse of the lungs, so that if they were mechanically caused to collapse the inspiratory centre was stimulated through fibres of the vagus nerves distributed to the lungs and when the centre was acting a normal inspiration was the result of such stimulation. On the other hand, mechanical inflation of the lungs had a tendency to inhibit inspiration and to depress the activity of the respiratory centre. During complete asphyxia the activity of that centre was in abeyance, but as the subject began to pass out of the asphyxial condition it tended to resume its functions and it was therefore clearly preferable to employ a method of artificial respiration which would stimulate the centre to activity rather than one which would depress its activity. Hence any pressure method was on physiological grounds to be preferred to a traction method—apart altogether from the greater simplicity of manipulation. Further, for the reasons above given, the prone position was to be preferred to the supine, especially in cases of drowning. The method about to be described presented none of the disadvantages which had been enumerated in considering the older methods. It was safe, efficient, and involved a minimum amount of labour on the part of the operator. It consisted in laying the subject in the prone posture, preferably on the ground, with a thick folded garment underneath the chest and the arms laid forward. The operator put himself in a position athwart the subject, facing his head and kneeling upon one knee with the other knee and hip flexed, and placed his hands on each side over the lower part of the back of the chest. He then slowly threw the weight of his body forward to bear upon his own arms and thus pressed upon the thorax of the subject and forced air out of the lungs. This being effected he gradually relaxed the pressure by bringing his own body up again to a more erect position but without moving the hands; as he did this air was drawn, by the removal of pressure from the chest walls and by their elastic reaction, into the lungs. This process was repeated quite regularly and without manifest intervals between the movements at least once every five seconds—i.e., not less often than 12 times a minute; it might be done somewhat more rapidly, but 15 times a minute would in any case be sufficient. By this means it was easily possible in an average man to effect an exchange of nearly 500 cubic centimetres per respiration—an amount which was more than enough to maintain complete aeration of the blood. The advantages of this method might be thus enumerated: 1. The ease with which the physical operations necessary to carry on artificial respiration might be performed; hardly any muscular exertion was required. 2. The efficiency of the gaseous exchange produced by it between the outside air and the air in the lungs. 3. The extreme simplicity of the procedure; no complex manipulations were required. 4. The impossibility of the air passages being blocked by the falling back of the tongue into the pharynx. 5. In cases of drowning the readiness with which water and mucus were expelled from the air passages through the mouth and nostrils. 6. It involved no risk of injury to the congested liver or to any other organ. The following instructions for the treatment of the apparently drowned were given. Immediately on removal from the water, place the patient face downwards on the ground with a folded coat under the lower part of the chest. Not a moment must be wasted by removing clothing. If respiration has ceased artificial respiration is to be commenced at once; every instant of delay is serious. To effect artificial respiration put yourself athwart the patient's body in a half-kneeling posture and facing his head. Place your hands flat over the lower part of the back of the chest, one on each side and gradually throw the weight of your body forward on to them so as to produce firm pressure—which must not be violent—upon the patient's chest. By this means the air and water are driven out of the patient's lungs. Immediately thereafter raise your body slowly so as to remove the pressure but leaving your hands in position. Repeat this forward and backward movement (pressure and relaxation of pressure) about every five seconds. In other words, sway your body slowly forwards and backwards upon your arms about 12 times a minute, without any marked pause between the movements. This course must be pursued for at least half an hour, or until the natural respirations are resumed. (If they are resumed and, as sometimes happens, again tend to fail, the process of artificial respiration must be again resorted to as before.) Whilst one person is carrying out artificial respiration in this way others may, if there be opportunity, busy themselves with applying hot flannels to the body and limbs and hot bottles to the feet; but no attempt should be made to remove the wet clothing or to give any restoratives by the mouth until natural breathing has commenced.

Dr. R. L. BOWLES regretted Professor Schäfer's absence. He said that there were but few points in which he did not agree, for the method which Professor Schäfer described was almost exactly that which he (Dr. Bowles) had advocated for the last 45 years and had been described as the Marshall Hall method. He only took exception to the method because it was not sufficient and it was necessary in many cases to supplement it by turning the patient into the position which he had described—viz., on to one side, and it was important that the patient should always be rotated on to the same side. To emphasise the importance of this point he said that in cases of apoplexy he had found that the lung on the side on which the patient was lying might present all the signs of consolidation and that when the patient was turned on to the opposite side an alarming increase of the dyspnœa had resulted, and it was only by turning the patient again on to the same side that a fatal issue was averted. He had noticed the same condition in hæmorrhage from the lungs. After the first and second movements had been repeated in succession for ten minutes it was advisable to pass to the third movement in which each time the patient was rolled from the stomach on to the right side; the uppermost arm was raised above the head in a line with the body. The movement expanded the chest and allowed more air to enter the uppermost lung. He thought that there was considerable danger in treating patients in the supine position. Professor Schäfer's method was good but it was not sufficient.

Dr. H. R. SILVESTER said that the method advocated and described by the author as "simple and efficient" had the merit of being extremely ancient, having been practised in principle from time immemorial down to the eighteenth century and might be called the simple compression method. Before the importance of the function of respiration was fully appreciated it was probable that the object sought was the removal of the water from the body of the drowned person which was believed to be the cause of danger, and there was no doubt that water when swallowed could be by this simple means removed from the stomach, although not from the lungs, which seldom or never contained any great amount. Dr. Silvester then quoted the earliest recorded cases in which the rolling method was used. With regard to respiration he said that the directions given by Professor Schäfer would generally be admitted to be faulty in principle, for expiration was made to precede inspiration, whereas expiration was second in order and not the primary act. In stillborn infants whose lungs had never been inflated, forced expiration at first was impossible and a similar remark might be applied to the Marshall Hall method. With regard to inspiration, after quoting the instructions given by Professor Schäfer, he said that the natural expansion of the chest was dependent on little more than the elasticity of the costal tissues and could only take place feebly and inefficiently unless it received some active mechanical aid, but when the unconscious patient was lying with the weight of a heavy body resting on the most mobile part of the thorax he was under the most serious disadvantage. In order to avoid this the plan of rolling was to be preferred, for by rolling the patient backwards the natural resiliency of the ribs was allowed full play and air was drawn into the lungs. The rolling method was, therefore, in this particular decidedly preferable, but the advantage of the rolling method was unfortunately somewhat neutralised by the danger of fracturing the cervical vertebræ and the fatigue of turning the almost lifeless body alternately on the chest and on the back 15 times in a minute for some hours. The congested condition of the heart and thoracic viscera also rendered the pressure of the prone position quite inadmissible in the treatment of asphyxia. Free elevation of the ribs in the supine position and the consequent tendency to a vacuum was much more calculated to remove the state of congestion. The next point considered was the amount of air respired by this method. It was found that the amount of air inspired was exceedingly small and compared very unfavourably with the amount obtained in the Silvester method. With regard to the amount of pressure likely to be exerted in following out the instructions given

by Professor Schäfer when carried out by a seafaring population he said that the pressure on the patient's chest would not be less than from 30 to 40 pounds. He thought that another great objection to this form of treatment was that it could not be carried out in a hot bath. In conclusion, he said that the disadvantages of the suggested treatment were: first, that expiration was made to precede inspiration when the condition of the chest was already in a state of expiration; secondly, that inspiration was opposed by the weight of the patient resting on the front of his chest when every encouragement should be given to the re-establishment of the respiratory functions; thirdly, that pressure on the thorax must be injurious when the heart and thoracic viscera were already in a state of congestion; fourthly, that the prone position was objectionable on account of its limiting the expansion of the chest and also by allowing the contents of the stomach to pass into the wind pipe; fifthly, that the amount of air inspired was much smaller than by other methods; sixthly, that a dangerous pressure might be exerted on the costal parietes; and seventhly, that the employment of the hot bath was impossible.

Mr. J. WARRINGTON HAWARD said that there were certain advantages and certain disadvantages in the various methods which had been advocated, but by a combination of the various methods in the manner suggested by Dr. Bowles he thought that the greatest advantage could be obtained. He thought that the patient in the first instance should be placed in the prone position, for it was of no use to draw air into the lungs until the fluid had been expelled as it formed an obstruction to the entrance of air. The position which was suitable for a person drowned was not suitable for a patient under an anæsthetic. The prone position placed pressure on the thoracic viscera, as Dr. Silvester had pointed out, and this was certainly an objection to the maintenance of the position. He emphasised the importance of keeping one lung clear and stated that no attempt should be made to relieve the congestion of the lower lung by turning the patient on to the opposite side. He considered that the method suggested by Dr. Bowles was to be preferred to any other and was of opinion that the society should now come to some definite conclusions on the subject and should publish the result of those conclusions.

Dr. F. W. HEWITT said that in cases of asphyxia arising from anæsthesia he considered it bad treatment to place the patient into a prone position and he had frequently noticed that faulty positions such as had sometimes to be assumed in operations embarrassed respiration. He referred to the case of a child, aged two years, to whom he had given an anæsthetic and during recovery breathing became difficult. He had compressed the chest and with each compression the inspiration became less and less till at the fifth compression no air entered the chest. It seemed that air was forced out but the mucus acted as a kind of valve and prevented the ingress of air. He thought that inspiration should be at once assisted and not only expiration.

Dr. M. S. PEMBREY said that he did not think that the experiments of Hering and Breuer could be used by Professor Schäfer in support of his view, since in the case of a person drowned the nerve centres were in complete abeyance. Respiration would go on after section of both vagi and the important factors in the mechanism were the deficiency of oxygen and the excess of carbon dioxide. He considered that respiration was of especial importance, as it favoured the circulation of the blood through the lungs and hence the centres in the medulla would be better supplied and the distension of the right side of the heart would be relieved. He considered that the method advocated by Professor Schäfer was absolutely useless in the case of an infant and suggested that the method of blowing air into the chest would be more effective. He then dealt with the difficulty met with in artificial respiration in patients with a rigid thorax. He considered that warmth was of great importance, since cold depressed the activity of the nervous centres.

Dr. NEWTON PITT alluded to the statement made that rupture of the liver might be produced by the use of Howard's method. He thought that it would be of great importance that any such case should be put on record.

The PRESIDENT said that the matter had been most thoroughly investigated by the committee and the society had now reached a stage when it would be possible to formulate rules for the treatment of the apparently drowned.

## OBSTETRICAL SOCIETY OF LONDON.

*Hydatidiform Mole.—Fate of the Ovum and Graafian Follicle in Premenstrual Ages.—Exhibition of Specimens.*

A MEETING of this society was held on Dec. 2nd, Dr. EDWARD MALINS, the President, being in the chair.

Mr. J. D. MALCOLM and Dr. R. HAMILTON BELL contributed a paper on a case of Hydatidiform Mole with Bilateral Cystic Disease of the Ovaries and invasion of the muscular wall of the uterus by chorio-epithelioma, the patient being quite well two years after removal of the parts. The patient came under the care of Dr. Malcolm Mackintosh on April 10th, 1901. She had a rapidly enlarging uterus, from which there were free hæmorrhages on April 9th, 14th, and 19th. The patient asserted that if pregnant she must have conceived on Feb. 17th. Mr. Malcolm saw her in consultation on April 29th and she was admitted to the Samaritan Free Hospital on the 30th. The first diagnosis was that the patient had a soft rapidly growing fibroid tumour. Subsequently it was thought that the condition might be one of ordinary pregnancy. Dr. Bell suggested that there might be a hydatidiform mole. Delivery of the uterine contents being imminent on May 8th Dr. Bell, after a consultation, emptied and curetted the uterus, the fundus of which was above the navel. A large quantity of hydatidiform material was evacuated. The uterus was again curetted on May 12th. On the 29th the conditions were unsatisfactory and the diagnosis was uncertain. Mr. Malcolm opened the abdomen and removed two ovarian tumours, the right one having a twisted pedicle. The condition of the uterus did not seem normal and it also was removed, the cervix being taken with it. The patient recovered and had remained well.—Dr. CUTHBERT H. J. LOCKYER said that the pathological interest of this specimen lay, first, in the discovery of two metastatic deposits of chorio-epithelioma in the muscular wall of the uterus three weeks after the removal of a hydatidiform mole; secondly, in the concurrence of bilateral ovarian cysts and malignant vesicular disease of the chorion; and thirdly, in the type of cystic ovarian disease. In regard to the latter point the question whether the cysts arose from corpora lutea had not yet been definitely settled. No lutein cells had been discovered in the walls of the few loculi examined, but it was Dr. Lockyer's intention to extend this investigation to other loculi before excluding the possibility of corpora lutea being the source of origin of the cysts. The literature bearing on the etiology of vesicular mole was referred to, Marchand's view being that cystic ovarian disease might influence the development of the ovum, whilst Veit regarded the endometrium as accountable for ovular degeneration and Findlay disallowed an etiological association between ovarian degeneration and vesicular mole. Other instances where vesicular mole and chorio-epithelioma had been associated with bilateral or single ovarian cysts were mentioned, some of these cases being recorded in full.—Dr. PETER HORROCKS congratulated Mr. Malcolm and all those concerned in the happy issue of the case and laid stress on the great superiority of the finger over the curette in the removal of a hydatid mole.—Dr. HERBERT R. SPENCER agreed with Dr. Horrocks that curetting was a dangerous method of removing a mole and thought from an examination of one of the specimens that the growth had been insulated by the curette. He did not approve of Mr. Malcolm's intention to remove the uterus by the supravaginal amputation. Whatever views might be held as to the relative advantages of amputation and total hysterectomy in the case of fibroids he thought that in suspected malignant disease, and especially in chorion-epithelioma, in which growths were known to occur in the cervix, total hysterectomy should be performed.—Mrs. SCHARLIEB gave a short account of a case of vesicular mole complicated with double multilocular ovarian cysts.—Dr. BELL, in reply, admitted that the use of the curette was not usually advisable in cases of hydatidiform mole and in the only other two cases which had come under his own care he had been able to evacuate the uterus with the ovum forceps and the finger. This case, however, was exceptional. After removing the bulk of the tumour with the ovum forceps he put in a finger to scrape away the rest but it proved very tough. The hæmorrhage was considerable and the condition of the woman, bad before the operation began, was now very serious. It was in these circumstances that it was determined to use the flushing curette

which checked the hæmorrhage and was more expeditious. The special circumstances of the case, he thought, had not been made sufficiently plain in the paper and it had appeared as if he advocated the use of the curette in all cases. This was not the case and after the remarks of Dr. Horrocks and Dr. Spencer he would probably hesitate still more in the future than he had done on this occasion.—Mr. MALCOLM supported Dr. Bell's view that in this particular case it was impossible to remove all the hydatidiform material with the finger; indeed, it was thought that at the first operation all the disease was not removed by the curette. He also thought that it was not likely that the new growths could have been felt by digital examination because they were so small and so deeply placed in the uterine muscle. The suggestion that a wound made by the curette might have allowed the disease to gain access to the tissues might be correct but it did not seem necessary to assume the existence of a wound if a new growth were adherent to the interior of the uterus. As regarded the removal of the body of the uterus first and the cervix afterwards it would have been better to remove both at once, but the removal of the body was undertaken rather as a precaution than on account of any definite disease diagnosed and the cervix had always appeared healthy. When the suspicious parts were observed it seemed desirable to remove the cervix also, and this was done.

Dr. T. G. STEVENS gave a lantern demonstration on the Fate of the Ovum and Graafian Follicle in Premenstrual Ages.—Dr. T. W. EDEN said, in expressing admiration for Dr. Stevens's work, that the latter could claim the credit of being a pioneer. The most interesting part of the demonstration consisted in the method by which the ovum was disposed of in the contracting follicles. If Dr. Stevens's view were correct, the normal protective and nutritive functions of the cells of the membrana granulosa became suddenly suspended when the follicle had reached a certain stage of development and destructive functions were exercised by the same cells instead. This reversal of the direction of physiological activity was, to say the least, very remarkable and it had no analogue in any other part of the body. He felt bound to say that he was not absolutely convinced that the destructive cells were really cells of the membrana granulosa. He thought it possible, notwithstanding Dr. Stevens's arguments, that they might be leucocytes. The weak point in Dr. Stevens's case consisted in the fact that his material was all post-mortem material. No importance cou'd therefore be rightly attached to the absence of signs of diapedesis; this was a vital process and could not be studied in dead tissues. Further, he thought it possible that the staining reactions of the destructive cells might be entirely different if they could be obtained in the living state.—Dr. HORROCKS, who congratulated Dr. Stevens on the scientific spirit and admirable manner of his address, asked if the slides as shown on the screen represented not merely different degrees of development of the ovum, but also different ages of the children from whom the ovaries had been taken? Thus, was the most fully developed ovum from the oldest child and the most immature from the youngest? He thought it very strange if Dr. Stevens's observations were correct that the ovaries should develop ova up to a certain degree of maturity and then develop cells to devour them. It would be of great scientific value if Dr. Stevens would continue his researches into the condition of the ova developing in ovaries of girls right up to the establishment of puberty.—Dr. C. HUBERT ROBERTS having added his testimony to the excellence of the paper, asked for further information with regard to the origin of the liquor folliculi. He did not think Dr. Stevens had made it at all clear what was the exact process of degeneration which the cells of the membrana granulosa underwent or whether it was a degeneration at all. As to the entrance of certain cells into the zona pellucida of the ovum itself Dr. Roberts was inclined to think that the cells depicted were rather of the nature of leucocytes than those of the membrana granulosa and that the process resembled phagocytosis to a considerable degree.—Dr. G. F. BLACKER thought that there were several difficulties in the way of accepting Dr. Stevens's views as to the part played by the cells of the membrana granulosa in the destruction of the ovum and the phagocytic action which he wished to assign to them. Nagel in his work on the ovum had held that the zona radiata was really a part of the innermost layer of the cells of the membrana granulosa. If this was so then the theory that the cells of the membrana granulosa burst through the zona radiata and then invaded the ovum could hardly be correct. Further than this these cells were degenerating and such cells did not as a rule take on such important functions as phagocytosis. He thought that the cells found lying within the ovum were probably more of the nature of cell inclusions.—Dr. W. F. V. BONNEY thought that Dr. Stevens's specimens showed very clearly that in premenstrual life the cells of the tunica granulosa retrograded *pari passu* with the ovum, whilst in adult sexual life they continued to grow after dehiscence of the follicle and formed the lutein layer of the corpus luteum. He had examined Dr. Stevens's specimens attentively and could find in them nothing at all resembling a lutein layer. Seeing that much recent work by various observers tended towards a conception which allotted to the luteum layer the function of producing the internal secretion of the ovary, and seeing further that the most striking point of difference between the generative organs of the child and adult respectively lay in the fact of the latter possessing a corpus luteum and the former not possessing it, he thought that Dr. Stevens's work suggested strongly that it was to the persistence and continued growth of the cells of the tunica granulosa after the disappearance of the ovum from the follicle by dehiscence that we owed that development of sexual characteristics which marked puberty.—Dr. STEVENS replied.

Dr. BONNEY showed a specimen of a Myoma undergoing Red Degeneration.

Dr. H. RUSSELL ANDREWS exhibited a Specimen of Bilateral Extra-uterine Pregnancy: (1) Lithopædion, full term, which had been eight years in the abdomen; and (2) a fresh Three Months Fœtus.

## EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

*Exhibition of Patients and Specimens.—Gout.—Radium.—Open-air Treatment of Broncho-pneumonia in Whooping-cough.—Bennett's Fracture of the Thumb.*

A MEETING of this society was held on Dec. 2nd, Professor JOHN CHIENE, the President, being in the chair.

Patients and specimens were shown by Dr. DAWSON F. D. TURNER, Dr. W. ALLAN JAMIESON, Mr. J. W. STRUTHERS with Mr. A. MILES, Dr. G A. GIBSON, Mr. DAVID WALLACE, and Dr. A. HILL BUCHAN.

Dr. D. CHALMERS WATSON gave a demonstration on the Comparative Pathology of Gout. The tissues were taken from a young adult fowl which had succumbed after a short illness to naturally acquired gout. Such cases were rare in the records of the disease and, so far as Dr. Watson was aware, no cases had been submitted to a complete histological investigation. The naked eye appearances found at the post-mortem examination were alteration of the synovia to a cream-like fluid which gave the murexide reaction, deposit of uric acid in combination in some extra-articular tissues round the smaller joints, recent pericarditis, widespread thrombosis, and areas of "necrosis" in the kidneys. Microscopic examination showed in addition (1) catarrhal exudation blocking the pancreatic ducts; (2) intestinal catarrh, especially in the ileum, the duodenum, and in the large intestine; (3) the collecting tubules of the kidney filled with granular leucocytes; (4) pronounced congestion of the liver, the spleen, and the kidneys; and (5) a localised deposit of urate of soda in a lymphatic gland. The appearances were regarded as characteristic of bacterial infection and Dr. Watson emphasised the importance of further attention being devoted to comparative pathology as the line of investigation most likely to advance their knowledge of the disease; it was specially important to obtain cases like the one recorded, but at an earlier period, so as to admit of an adequate bacteriological examination of the tissues. The changes observed in the intestine recalled and gave a new importance to the old-time theory of gout as an intestinal auto-intoxication or infection which was revived by Dr. Watson in 1901. The appearances in the pancreatic ducts were described as possibly having significance in connexion with the familiar clinical symptom—gouty glycosuria.—Dr. G. L. GULLAND and Dr. T. F. S. CAVERHILL made some remarks and Dr. WATSON replied.

Dr. DAWSON TURNER read a paper on Radium. After recalling the steps which led to the discovery of radium he said that the forms of radiation which had been more or

less recently made use of in medicine and surgery might be divided into five groups: (1) radiant heat rays; (2) ordinary light; (3) ultra-violet light; (4) Roentgen rays; and (5) radium emanations and rays. The *effluve* or brush discharge produced by high-frequency currents or by static electricity combined some of the properties of the last two. Dr. Turner then described the properties of Finsen and ultra-violet light and Roentgen rays. Radium gave off three kinds of rays as well as a radio-active emanation. It maintained itself constantly at a higher temperature than its surroundings and constantly emitted heat at an estimated rate of about 100 calories per gramme per hour, and was thus in its behaviour in outstanding antagonism to some of the fundamental physical laws. The emanation was of the nature of a luminous gas which could be condensed by intense cold and which imparted radio activity to objects in its path. More than two-thirds of the heating effect of radium were due to this self-produced emanation and one cubic centimetre of it would probably instantly melt down the glass tube which contained it. Pfeiffer and Friedberger had made experiments to determine the germicidal activity of radium. A three days' exposure to 25 milligrammes of radium bromide killed the organisms of cholera, typhoid fever, and anthrax. Though such result was not very encouraging it must be remembered that the Roentgen rays had no bactericidal effect though their beneficial effects in certain diseases could not be doubted. Dr. Turner then referred to the strong action which radium rays had on the human body and to the intractable ulcers which they produced. E. S. London has tested the effect of the rays on mice. Reddening of the ears and blinking of the eyes appeared on the third day; general torpor and paralysis followed with death on the fourth or fifth day. The skin and brain were the parts most affected. The chief physiological effects of radium, so far as at present known, might be arranged in three groups: (1) effects on the skin, producing inflammations and ulcers; (2) effects on the nervous system, producing paralysis and death; and (3) luminous effects produced in the partially blind. The radiations of radium had been tried in various diseases (chiefly those in which the Roentgen rays or Finsen light had been found useful)—e.g., cancer, rodent ulcer, and with distinct benefit in certain cases. The effects produced appeared to be similar to those produced by the Roentgen rays. If it could be obtained in larger quantities it might be employed in practical medicine and so do away with the bulky and costly x-ray installations; patients would be provided with a fragment of radium sealed in a tube which they could themselves apply to the affected part as directed. Radiographs of the teeth or bony walls of cavities could be taken by introducing a fragment of radium inside and placing the negatives outside. Deeply seated growths could be attacked by introducing into them by operation a small tube with the radio-active substance. A few grammes of radium would light up an x-ray screen brilliantly through an inch or more of lead. Dr. Turner also indicated how in many other ways radium might be employed and hoped that further investigation might result in great benefit to mankind. Several photographs taken by the radium rays were shown and specimens of radio-active pitch-blende and bromide of radium were exhibited.

Dr. C. B. KER read a communication on the Open-air Treatment of Broncho-pneumonia complicating Whooping-cough. He said that when he first took charge of the Edinburgh City Hospital seven years ago Sir Henry D. Littlejohn had drawn his attention to the very large death-rate from whooping-cough both in the city and in the hospital, and had expressed the hope that something might be done to reduce it. From that time Dr. Ker had had this object steadily in view and although he had not attained the success that might be desired he had at least had the satisfaction of making a considerable reduction in the death-rate of this most serious complication. Those who only saw whooping-cough in good general practice might not realise how serious it was liable to be in the children of the poor. For the five years ending 1900 the mortality in Edinburgh was 0·48 per 1000 persons living, or, in fact, nearly one-third of the whole zymotic death-rate was due to this disease and was chiefly confined to the lower classes. To endeavour to reduce the death-rate, however, the practical point was to find some method of successfully treating the broncho-pneumonia. It was obvious that in the treatment of an acute or subacute pulmonary inflammation, due almost certainly to the action of micro-organisms and in which toxæmia played a prominent part, everything should be done to maintain the patient's strength and to secure rest. In whooping-cough this was the great difficulty. Dr. Ker had at first tried nearly every remedy in whooping-cough. Belladonna was the only drug which he had much faith in and when pushed freely he thought it of great value in both ordinary and complicated cases of whooping-cough. Inhalations of creasote or eucalyptus he had found to be very disappointing. As regarded the broncho-pneumonia itself leeches were of undoubted value in cases with bad cyanosis. The ultimate routine was to rub the chest with stimulant oils and to apply a jacket of Gamgee tissue. In simple cases a little ipecacuanha wine was given and to the worst belladonna was administered freely. Under such treatment the death-rate still remained appallingly high and roughly speaking two children out of three who developed broncho-pneumonia died. The death-rate of broncho-pneumonia was 71 per cent. in the Edinburgh City Hospital and compared favourably with that of Glasgow—76 per cent. When the idea of putting the patients as far as possible in the open air occurred to Dr. Ker two facts influenced him. One was that he had often seen children who had struggled through a broncho-pneumonia succumb to phthisis or acute tuberculosis, and the other was that a certain number of patients used to contract broncho-pneumonia after admission. He had every reason to believe that the disease was infectious and to put the patients in the open air could hardly increase the death-rate. It would, indeed, probably diminish it by preventing the occurrence of pulmonary tubercle and also by lessening the number of cases which developed in hospital. Although he knew well that many, especially continental, writers had recommended the open air for children with pertussis, the occurrence of a pulmonary complication had been stated to be a special contra-indication of this treatment. Dr. Ker, however, decided to risk this method of treatment and he started with four cots which were placed in a sheltered position but completely uncovered and near the whooping-cough wards. The children were carried out and left for about six hours daily provided it did not rain. The cases were selected from the worst in the wards and indeed were regarded as hopeless. No bad results were noted and there was a very marked improvement in some of them. These cases had been under treatment for some time previously and so had not the advantage of the open air from the start. They therefore did not show the same recovery-rate that was reached later. At a subsequent period Dr. Ker was able to get all the cases in the wards out into the open air for several hours daily and cases admitted with broncho-pneumonia had the benefit of the new treatment from the time of admission. There was no contra-indication to the treatment except convulsions, but these latter patients were seldom kept indoors more than one or two days. The children were warmly covered and the chest was carefully protected with cotton-wool. Screens protected the windward side of the cots which were otherwise well sheltered. The main effects of the treatment were briefly as follows. The whoops were unaffected in number or severity. The appetite was ravenous, the general strength was much improved, and the children slept much better. If from wet weather they were kept indoors for one or two days (which seldom happened) they rapidly lost both appetite and sleep. Convulsions did not markedly decrease, but the whole nervous tone of the children seemed better and they were much less irritable. The temperature was not affected so rapidly as might have been imagined but there was usually a steady improvement in all the symptoms from the day they were first taken out. The improvement was very gradual but both temperature and respirations were considerably lower after a week's treatment. A minor advantage was the rest given to the wards for several hours daily so allowing them to be thoroughly ventilated. Lastly, notwithstanding that one patient developed broncho-pneumonia though out daily and that several had relapses it might be said broadly that broncho-pneumonia of hospital origin became extinct and tuberculous patients did better. The first trials of the treatment commenced in May, 1901, and were continued until Nov. 15th when, although the patients did not suffer, the nurses did on account of the continual dampness. To continue the treatment the sashes of all the windows in a ward of six beds were removed and several new windows were made so that two sides of the room were practically open. In this ward, heated by a good stove, most of the cases of broncho-pneumonia were treated during the winter. During the next summer this formed a

convenient room for the worst cases to sleep in, the patients being carried daily into the open air. This treatment was continued till the late autumn of 1902 and again resumed in the summer of 1903. Dr. Ker then gave statistics as to cases and death-rate during the period under review and concluded by saying that of all those treated in the open air of 63 cases death occurred in 19, the percentage rate being 31·1, a great contrast to the 71 per cent. with which the treatment was started. The conclusion arrived at was that whereas two out of three of the patients used to die, now in the open-air treatment two out of three were saved.—Dr. JAMES CARMICHAEL, Dr. CAVERHILL, and Dr. H. HARVEY LITTLEJOHN having spoken, Dr. KER replied.

Mr. MILES and Mr. STRUTHERS contributed a paper entitled "Bennett's Fracture of the Base of the Metacarpal Bone of the Thumb." They stated that it was in 1881 that Professor E. H. Bennett of Dublin had directed attention to this common form of injury to the thumb and he maintained that this was the most common simple fracture of the metacarpus. When the end of the thumb was struck the force was transmitted along the phalanges and metacarpal bone and the base of the latter was driven against the trapezium. Inspection of the metacarpal bone showed that there was a marked palmar projection at the base of the bone which carried a large part of the articular surface. An antero posterior section through the joint between the metacarpal and the trapezium showed that the articular surface of the metacarpal did not bear equally in the whole extent on the trapezium. In full extension the metacarpal bore on the dorsal part of its articular surface while in full flexion it bore on the palmar part. Further, as the articular surface of the trapezium was convex from before backwards, a force acting in the long axis of the metacarpal would tend to drive the bone on to the back of the trapezium. When, therefore, the metacarpal was driven forcibly against the trapezium, as in a fall on to the point of the thumb, strain must be thrown on the prominent palmar basal projection. The trapezium was firmly supported by the scaphoid, trapezoid, and second metacarpal bones and they in their turn by the radius, &c. Consequently the anterior basal projection of the metacarpal bone being relatively weak and badly supported, broke off when a fracturing force was applied in the long axis of the thumb. A continuance of the force would drive the metacarpal on to the back of the trapezium, leaving the anterior fragment with the portion of the articular surface which it carried *in situ*. The signs and symptoms of the injury were: (1) pain along the metacarpal of the thumb, most marked at the base; (2) swelling round the base of the bone and along the shaft, filling the hollow between the extensor tendons of the thumb; (3) very marked limitation of the range and strength of movement of the thumb, complete abduction and complete opposition being impossible; (4) a characteristic abnormal prominence at the base of the metacarpal bone of the thumb posteriorly; and (5) in recent cases the deformity could be readily reduced by extending and abducting the thumb while pressing the base of the metacarpal towards the palm. There was usually marked crepitus associated with this reduction. The deformity returned at once when extension and pressure were removed. In old-standing cases complete reduction might be impossible but grating was often felt due to irregularities in the articular surface. When seen early, or even in old-standing cases when possible, reduction must be effected and the thumb fixed in the reduced position for two or three weeks. A poroplastic splint moulded to the wrist and thumb might be applied for this purpose or the special splint recommended by Professor Bennett. Passive movement should be carried out very carefully at first and caution must be given to the patient not to put any strain on the thumb as the anterior fragment might very easily be detached. Manual workers should be forbidden to use the thumb for five or six weeks from the date of the accident. When efficient treatment was carried out early complete recovery was to be expected. Deformity must always remain when patients did not present themselves for some weeks after receipt of the injury. The ultimate results as regards power and range of movement of the thumb, even in cases where considerable deformity remained, were good, though, perhaps, the grip of the affected hand was slightly weaker than was that of the sound side. Mr. Miles and Mr. Struthers recorded 14 cases in all, two being in females and 12 in males; the ages varied from 19 to 60 years. In six of the cases the left thumb was affected, in seven the right, and in one case the side was not stated. Seven cases were due to falls against the thumb, two to striking blows while fighting, one to striking the thumb against a wall in a struggle, one to striking the thumb against a door in the dark, one to heavy bags of sugar falling on the thumb, while in two the cause was not stated. Numerous specimens of the fracture were shown as well as radiograms of the cases exhibited earlier in the evening.

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SOCIETY FOR THE STUDY OF DISEASE IN CHILDREN.—A meeting of this society was held on Nov. 20th, Dr. H. R. Hutton (Manchester) being in the chair.—Dr. James Taylor showed an anomalous case of Diplegia. A child, aged four years, soon after an operation for an abscess on the right side of the neck, became altered mentally and lost the power of walking. Additional symptoms found on examination were occasional regurgitation of fluids through the nose, squinting, absence of knee jerks, and marked incoördination. Most of the symptoms had passed off under treatment but the degree of intelligence was not yet quite up to the normal standard. The diagnosis made at first was one of diphtheritic paralysis, although there was no history of sore-throat. He was now inclined to look on the condition as some other form of toxæmia which had led to alterations in the cerebral cortex.—Dr. G. E Shuttleworth had never seen mental deterioration follow immediately on diphtheria but he recalled one case in which an attack of diphtheritic paralysis was said to be the precursor of mental impairment. In the present case he thought that some previous mental weakness had been aggravated by the acute illness.—Dr. Fletcher Beach regarded the case as one of cerebral diplegia rather than diphtheritic paralysis.—Mr. Francis Jaffrey showed a child, aged 18 months, suffering from Multiple Subcutaneous Tuberculous Nodules. The history of the case was that these nodules first appeared when the child was vaccinated at the age of three months. Several of the nodules had softened and burst. He found that vaccination was usually assigned as the cause of these nodules by mothers and therefore advised the postponement of vaccination if any nodules were present. —Dr. C. W. Chapman had had a case of similar nodules in an adult which was completely cured by the internal administration of iodoform.—Dr. E. Cautley recalled a case in a baby ten months old, who died ten weeks later from tuberculous meningitis.—Mr. J. P. Lockhart Mummery suggested the excision of one of the nodules to determine whether it was a pure tuberculous affection or a mixed one. —Dr. G E C. Pritchard had seen a case in a woman which had lasted for two years and which was finally cured by arsenic.—Dr. G. A. Sutherland showed twin sisters, aged five years, who were the subjects of Idioglossia.—Dr. Leonard G. Guthrie remarked on the strong family likeness which such cases showed, although the particular defects were not the same.—Dr. F. Parkes Weber referred to a case under his own care where idioglossia had followed on brain disease in early life. He thought that certainly the motor centres had been affected.—Dr. Henry Ashby (Manchester) did not like the word "idioglossia" and preferred to describe the condition simply as defective speech. Such a condition was common in the special schools for backward children. He thought that one factor which was present was want of attention and that this was coupled with a certain amount of mental backwardness. —Dr. Shuttleworth agreed with the last speaker as to the frequency of defects of speech in backward children. There was an element of laziness about the condition.—Dr. Hutton thought that the trouble was due to defective hearing and defective observation, coupled with a general lack of energy.—Dr. George Carpenter showed: (1) a case of Premature Greyness of the Hair in a female child, aged 11 years; the condition was not inherited and she was in other respects a perfectly healthy child; and (2) a case of General Paralysis of the Insane in a girl, aged 11 years. The symptoms dated back more than a year.—Dr. Fletcher Beach had collected notes of 200 cases of this affection and in the majority of these syphilis was present. In children general paralysis usually developed at the time of the second dentition.—Dr. Taylor said that in his experience such cases commenced with gradual dementia and had associated fits, tremors, inactive pupils, and excessive or absent knee jerks. In the majority there was the definite association with hereditary syphilis. The physical conditions in children were the same as in adults but the

mental conditions were different—namely, simple dementia in the former without delusions of grandeur.—Mr. Douglas Drew gave an account of three cases of Sarcomata operated on.—Dr. Pritchard showed an infant, aged five months, suffering from congenital heart disease with dysphagia. The difficulty in swallowing appeared to be due to incoördination of the muscles of deglutition. The child was gradually sinking into a marasmic condition although the cardiac murmur was diminishing.—Dr. Cautley read a paper on an Unusual Case of Congenital Hypertrophic Stenosis of the Pylorus. The patient died at the age of 14 weeks and the pylorus presented the usual characteristics but both small and large intestines contained a considerable quantity of normal fæces. While under observation he had gained 13 ounces in weight during one period of two weeks and six ounces during another period of one week. During life peristalsis was noted on one occasion only, the pylorus was palpable, the stomach was moderately dilated, and vomiting was present but was not characteristic. There was not marked constipation and even eight days before death a large almost normal stool was passed. Dr. Cautley pointed out the difficulties of diagnosis in a case of this nature and thought that many such were overlooked. Operation might have saved the child's life but the case was regarded as a somewhat mild form of the condition and later the acute diarrhœa rendered operative interference inadvisable. He thought that the absence of charcteristic vomiting in this instance might be urged as an argument against the view that the hypertrophy was due to spasm.—Mr. Clinton T. Dent related two cases of the same disease successfully treated by pyloroplasty.—Dr. Alexander Morison showed the Stomach of a Child, aged two months, in which hypertrophic stenosis had been diagnosed and the patient had been admitted for operation. While under observation very little vomiting occurred and only occasionally was gastric peristalsis exhibited. Operation was deferred and the patient was discharged but returned five days later in a collapsed condition with a temperature of 90° F. and died soon afterwards. At the necropsy the pylorus was found to be large, long, and hard.—Mr. J. Howell Evans and Dr. G. de B. Turtle also gave accounts of similar cases which had come under their notice.

GLASGOW OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—A meeting of this society was held on Nov. 25th, Dr. J. Nigel Stark, the President, being in the chair.—After an exhibition of specimens a discussion upon Accouchement Forcé, with special reference to the instrument of Bossi, was opened by Dr. Robert Jardine and Dr. T. M. Munro Kerr. Dr. Jardine remarked that the operation accouchement forcé was almost entirely done in the interests of the mother save when the cord prolapsed very early in the course of labour, when the membranes ruptured before labour began and the pressure was detrimental to the child. The operation was most frequently done in the interests of the mother for eclampsia. In pernicious vomiting, heart disease, chorea, and insanity it might be necessary. In cases of complete occlusion of the os Dr. Jardine had performed it upon five or six occasions. The methods of performing the operation were then discussed. The extraction of the child was not touched upon but only the dilatation of the cervix. It was noted that when the cervix was not taken up but retained its full length it was more difficult to dilate than when it was so taken up as found in those who had about reached term, and especially in those where labour had begun. The dilatation might be carried out forcibly or by the aid of incisions. Digital dilatation was mentioned as being the oldest method. If the cervix was soft and yielding full dilatation could be obtained in 15 or 20 minutes. The strictest aseptic precautions had to be observed. A continuous hot douche during the process was beneficial. Chloroform should be administered not only to prevent pain but to assist the relaxation of the cervix. Though the lithotomy position was the more suitable the lateral was also convenient. After dilatation delivery was completed in a variety of ways according to the nature of the case. With regard to dilatation by means of instruments, in some cases if the cervix was very soft hydrostatic bags might be used. This was a slower method and where time was of great importance the method was not very suitable. Hegar's dilators were useful to begin the operation with when a finger could not be inserted. Expanding dilators were the most useful and of these Bossi's or a modification was the best. (The various varieties of the instrument were shown.) The eight-pronged instrument of Frommer was recommended. The dilatation must be continuous and slow. From 20 to 30 minutes were required for the full dilatation of the cervix. If carefully used there was very little tearing of the cervix. Dr. Jardine then related the histories of several cases in illustration. The incision method was next reviewed. Dr. Jardine had done this operation quite a number of times in cases of eclampsia. He had practised the making of four incisions in the cervix, further dilatation being obtained by the hand. In some cases the cervix had been subsequently stitched, while in others where there was no hæmorrhage the cervix was left alone; the after results had been quite as good in the latter. In conclusion, Dr. Jardine stated that he thought Bossi's dilator a most useful instrument, but in a case where the cervix was extremely rigid he would prefer the incision method as causing less shock.—Dr. Kerr limited himself to considering the methods of forcibly enlarging the cervical canal. He described briefly the methods of manual dilatation, giving his opinion that by this method safely to dilate and to extract a child when the cervix was not taken up required on an average 40 minutes in a multipara and 60 minutes in a primipara. It was on the whole the safest but certainly was the slowest method. As regards dilatation with Bossi's or Frommer's dilator, he came to the following conclusions: (1) when the cervix was obliterated and the os would admit the dilator without difficulty dilatation could be carried out in about 25 minutes and there would be little or no laceration of the cervix; (2) in cases where the pregnancy had advanced to or near term, even although the cervix was not obliterated, dilatation might be accomplished with comparative safety to the cervix provided care, time, and patience were expended in the operation; and (3) in cases of early pregnancy with the cervix unobliterated there was decided risk of extensive lacerations even although the greatest care was taken. Dr. Kerr then considered the methods of enlarging the canal by making deep incisions and gave examples to show that the child could be extracted in four minutes. He also described a case of Cæsarean section upon Dührssen's method performed with success at the fifth month of pregnancy.—Dr. W. L. Reid had met with few cases where manual dilatation had failed but the method was not rapid.—Dr. W. B. Armstrong, Dr. J. W. Russell, and Dr. G. Scott MacGregor having spoken, Dr. A. MacLennan mentioned that though he had had no experience of the Bossi instrument he had performed Dührssen's operation upon a primipara at full term for a rigid cervix. The suturing of the anterior incision had been readily performed without assistance in a private house.—Dr. Gardiner thought that the general practitioner would prefer to use Bossi's dilator to performing vaginal Cæsarean section, and the President having remarked that there was a danger in these days of midwifery becoming too meddlesome Dr. Jardine and Dr. Kerr replied.

THERAPEUTICAL SOCIETY.—A meeting of this society was held in the Apothecaries' Hall, Blackfriars, on Nov. 24th, Sir William Thiselton-Dyer, the President, being in the chair.—Dr. R. B. Wild of Manchester read a paper on the Pharmacology of the Saponins, illustrated by diagrams and tracings, and said that the saponins were bodies found in several drugs, as senega, sarsaparilla, digitalis, and quillaia bark. They had the property of forming emulsions with water but were poisonous hypodermically. Even in very diluted doses they caused decided contraction of the blood-vessels and a frog's heart gave small, quick, regular beats without becoming thoroughly relaxed, but with a stronger solution it stopped quickly in a contracted state. First, it was believed that quillaia bark was often used to form an emulsion, even when not prescribed, but if there was any lesion of the stomach or intestines this might become dangerous; secondly, it was possible that all these drugs containing saponins might, like sarsaparilla, be useful in tertiary syphilis, but there was reason to believe that sarsaparilla deteriorated rapidly by keeping and old samples might be entirely inert; and thirdly, saponins were not antagonistic to digitalis, but resembled it in their power of contracting the blood-vessels and the cardiac muscle, but they did not cause the slowing of the beats and the prolongation of the systole as did digitalis.—Dr. Soper said that, from this most interesting paper, it would appear that saponin acted similarly to adrenalin.—Dr. Sainsbury thought that saponin was similar in

its action to digitalis and might be useful in heart disease but that it certainly ought not to be used as a mere emulsifying agent.—Dr. Wild, in reply, said that saponin had not the local action of adrenalin and it differed from digitalis inasmuch as the blood pressure was actually diminished after its use from the heart becoming weaker, although the blood-vessels were contracted by it.—The President thanked Dr. Wild for his most interesting and important paper and said that the toxic properties of the saponins had not been fully appreciated or drugs containing them would not be so often employed as emulsifying agents.—Professor Wyndham Dunstan, F.R.S., gave an account of the chemical investigations now proceeding at the Imperial Institute at the instance of the Government of India of the various Indian Aconites and their Alkaloids. The properties of the three distinct alkaloids which had been isolated from the three characteristic aconites known in European medicine were first noticed: aconitine from aconitum napellus, japaconitine from aconitum japonicum or Fischeri, and pseudaconitine from the aconitum ferox usually found in European medicine. These three alkaloids, though chemically different, belonged to the same type and exerted a physiological action which only differed in degree. The Indian aconites, varieties of aconitum napellus and aconitum ferox, which had so far been examined by Professor Dunstan and Mr. Andrews, had furnished pseudaconitine and two new alkaloids which had been named indaconitine and bikhaconitine. In chemical properties and in physiological action and toxicity the new alkaloids closely resembled pseudaconitine. The botany of these aconites had been studied at Kew by Dr. O. Stapf and the physiological action of the alkaloids had been obtained from them by Professor Cash. The aconitum palmatum of India has furnished a new non-poisonous alkaloid to which the name of palmatisine had been given. It was closely allied to the alkaloid atisine derived from another Indian species, the aconitum heterophyllum.—Dr. Stapf of the Royal Gardens, Kew, said that the aconites had long been known as most powerful poisons, but the plants had not been accurately determined till quite recently, when Professor Dunstan found that different alkaloids were obtained from different roots of aconite all called aconitum ferox or "bikh." Dr. Stapf then ascertained that the aconite roots obtained from Nepaul and Sikkim were derived from the aconitum spicatum. Those from Kumaon were obtained from the aconitum Balfourii and those from Garhwal from the aconitum cleinorrhizum; the aconitum spicatum yielded bikhaconitine, the other two species pseudaconitine. In the Punjab the aconite roots were brought from the mountains north of Peshawar and these were derived from the aconitum chassnanthum, giving a new alkaloid, indaconitine. The aconitum napellus had not been found in India. Dr. Stapf further said that a non-poisonous aconite gave the Judwar Kutai, the zedoary of the ancients, the tubers of which closely resembled those of aconitum heterophylloides found in East Nepaul, but there were at least 20 species of aconites in India.

GLASGOW SOUTHERN MEDICAL SOCIETY.—A meeting of this society took place on Nov. 26th, Mr. Thomas Richmond, the President, being in the chair.—Mr. John Carswell read a paper on Alcohol and Preventive Medicine. Mr. Carswell referred to the diminution of the death-rate in Glasgow during the last 30 years. This diminution, he said, had occurred in every district with the exception of two—viz., Brownfield and Cowcaddens. The three worst districts 30 years ago were Bridgegate and the Wynds, High-street and the closes east of High-street, and High-street and the closes west of that thoroughfare. These three districts had largely diminished in population since, while the populations of Cowcaddens and Brownfield had not diminished. Comparing these five districts Mr. Carswell pointed out that the character of the population had improved in all the districts which showed a lower death-rate and had declined in the districts which had a stationary death-rate. He pointed to the marked reduction in the death-rate which followed the reconstruction of the Bridgegate and clearing out of the "rookeries." The saving of life from zymotic diseases was, he said, but a small part of the work resulting from proper sanitary control and he pointed to the death-rates of 1891 and 1900 which showed a reduction of 0·318 per 1000 from zymotic diseases, while the reduction in the death-rate from respiratory diseases had amounted to 2·372 per 1000. Referring to the persistently insanitary districts of Glasgow Mr. Carswell considered that there was some reason for their lack of improvement which required elucidation. There was some strange affinity which kept the poor together; it might be the character and habits of the people or it might be cheapness of living which induced them to huddle together. They were forced into the worst districts, having been ejected from better localities either from inability to pay the rent demanded or on account of disorderliness. He believed the crux of the position lay in the one word—poverty. He recognised two classes of poverty (1) primary poverty, in which there was absolute insufficiency of means, and (2) secondary poverty, which was induced by misfortune, ignorance, drink, and vice. Speaking on the part alcohol played in the matter, Mr. Carswell was very optimistic; acknowledging that drunkenness caused poverty, failure of nutrition, and serious disorganisation of mind and character, he did not believe that the craving for alcohol was inherited or that alcoholism in the mother could produce serious mischief in the unborn infant. He considered that the doctrine that the nutritional defect in the child was caused by alcoholism in the parents was very disheartening and he did not believe that acquired vices were transmitted to the offspring. He instanced the improvement of the children of alcoholics by better environment. Proper care in childhood was, he believed, a factor in checking the degeneracy of manhood. Reduction in the death-rate had not, he thought, favoured an increase in adolescent insanity. He advocated increased interest in the care of children and would favour the establishment of a "child welfare society." He pointed with satisfaction to the good effect of supplying children of the poor with food while attending school. Mr. Carswell deplored the "blank apathy" in the lives of the poor and hailed with delight the advent of any demagogue with power to awaken conscience in the poverty stricken. He thought that this was the way by which the poor might be made to abandon drink and to awaken to fresh interests, their own included.—Considerable discussion followed and was taken part in by Dr. A. K. Chalmers, Mr. A. Miller, Dr. D. Macgilvray, and Dr. T. Forrest.—Mr. J. V. Wallace thought that the improvement in the condition of the people was due not so much to sanitary science as to the spread of education.—Dr. Carstairs C. Douglas failed to see how any amount of erudition could conduce to longevity when there was a cesspool under the floor of the living room.—On the motion of the President, Mr. Carswell was thanked for his address.

LIVERPOOL MEDICAL INSTITUTION.—A meeting of this society was held on Dec. 3rd, Dr. W. Macfie Campbell being in the chair.—Mr. F. W. Bailey read a note on the History of the Stethoscope and showed an example of Laennec's instrument.—Dr. K. A. Grossmann gave a communication on the Occurrence of Double Focus in the Human Lens as found by him in five patients during the last two years. The lens was divided by a sharp line into two areas of different refraction, in four out of the five cases symmetrical. The nature of this hitherto undescribed anomaly and the methods employed in examining it were described and illustrated by a number of diagrams and lantern slides; two of the patients were shown, a man, aged 20 years, and a female, aged 45 years. Dr. Grossmann also demonstrated a patient in whose left eye the ocular conjunctiva was the seat of a number of large papillomata without any catarrhal or other discharge.—Mr. G. P. Newbolt read notes on Osteotomy of the Upper End of the Femur, illustrating his remarks by lantern slides. He laid stress upon the following points: (1) all cases of marked tuberculous disease of the hip should be treated on an abductor frame in order to avoid the adductor deformity almost invariably present; (2) in all cases of ankylosis or of short strong fibrous union with deformity osteotomy of the upper end of the femur should be performed; (3) Adams's operation of sawing through the neck of the femur, when present, was to be recommended, when absent transtrochanteric osteotomy might be done; Gant's operation—infratrochanteric osteotomy—was not so good though it avoided sawing through a big mass of bone; and (4) open incision with removal of the upper end of the bone was sometimes necessary; tenotomy or rupture of the adductors was often needed in addition. Septic sinuses about the hip offered no bar to osteotomies in their neighbourhood.—Dr. J. C. M. Given reported a case of Hyoscin Poisoning.—Dr. C. A. Hill read a note upon Enlargement of the Thyroid at Puberty. Two cases were narrated in which pressure symptoms arose. Both improved under the

exhibition of thyroglandin.—The various communications were commented upon by Dr. Campbell, Mr. Newbolt, Mr. T. C. Litler Jones, Dr. W. B. Warrington, Dr. Given, Dr. A. S. F. Grünbaum, and Dr. J. J. O'Hagan.

ABERDEEN UNIVERSITY MEDICAL SOCIETY.—A meeting of this society was held on Dec. 4th.—Mr. F. Anderson read a paper on Diabetes. After discussing the various causes he came to the conclusion that the only satisfactory explanation was that diabetes was due to pancreatic disease. An apparently normal pancreas showed on microscopic examination degeneration of the islands of Langerhnus in a good many cases. In treatment diet was of the utmost importance and for the first few days ought to be directed to the removal of glycogen from the liver. Thereafter on a special diet in which milk largely predominated the patient's urine should show no increase in sugar. Exercise of all sorts was necessary in suitable cases to keep the patient "fit" or massage might be resorted to were exercise not permissible. The best drug was liquor morphinæ hydrochloratis in big doses of 110 minims three times a day. In one case 150 minims three times a day had been given. Uranium nitrate had also some reputation.—Mr. J. S. Gray followed with a paper on Blood-letting. Beginning by a rapid survey of its employment in ancient times he went on to its applications at the present day. Its uses now were mainly limited to relieving local inflammation, mitral incompetence, acute pneumonia, and the exanthematous fevers, but probably at no distant date a wider field of application would be found for it.—Interesting discussions followed each paper.

EDINBURGH ROYAL MEDICAL SOCIETY.—A meeting of this society was held on Dec. 4th, Dr. H. D. Shepherd being in the chair.—A dissertation on Puerperal Eclampsia was read by Dr. B. P. Watson. He described the clinical varieties of the condition and briefly discussed the differential diagnosis, the causes of death, and the post-mortem appearances. On the question of etiology he mentioned as inadequate the theories that uræmia, cerebral anæmia, and mere nervous excitability were the causes of the disease. The most plausible theories were those of Bouchard and Nicholson, that of Bouchard being that the disease was really an auto intoxication, while Nicholson believed that inadequacy of the thyroid secretion was the primary cause of the disease. This latter theory, Dr. Watson held, would explain the symptoms in at least some of the cases; and he laid stress on the use of thyroid extract for prophylaxis and treatment.—Dr. D. C. L. Fitzwilliams read notes of a case operated on for Gall-stones on which a subsequent gastro-enterostomy was performed.

ROCHDALE AND DISTRICT MEDICAL SOCIETY.—A meeting of this society was held on Dec. 3rd.—Dr. Charles H. Melland gave a lantern demonstration of micro-photographs illustrating the Characters of the Blood in Health and Disease. The first series of slides showed the elements of normal blood. These were followed by the various types of anæmia and in this connexion the progress towards recovery in pernicious anæmia was demonstrated. Leucocytosis and the different varieties of leucocythæmia and finally the parasite of malaria were shown.—Mr. G. W. Malim and Mr. W. Stanwell expressed the thanks of the society to Dr. Melland for his demonstration and congratulated him on the beauty of his preparations.

# Reviews and Notices of Books.

*Laboratory Studies in Tropical Medicine.* By C. W. DANIELS, M.B. Cantab., late Medical Superintendent of the London School of Tropical Medicine, Director of the Institute for Medical Research, Federated Malay States. London: John Bale, Sons, and Danielsson, Limited. 1903. Pp. 384. Price 15*s.* net.

"THE object of this work is to assist practitioners in the tropics in the application of simple laboratory methods to the practice of medicine." The author of the treatise brings to the fulfilment of the task that he has thus set before him the special qualification of a far-reaching experience gathered from several tropical countries. How well he has succeeded will be gathered from this brief review. The worker in the tropics, unless he resides, perchance, in the one or two presidency towns, will have no equipped laboratory to resort to, but Dr. Daniels in his opening chapter tells how this deficiency can be remedied. Minute details as to the working of the microscope are laid down; even such minutiæ as, for instance, the proper treatment of cover glasses are not forgotten. Next we find the various methods for the preparation of blood films, fæces, mosquitoes, and bacteriological material adequately described. The points with regard to post-mortem examinations that are peculiar to the tropics are narrated; minute directions as to the preparation for the examination of mosquitoes are then given, whilst it is well pointed out with regard to stains and other reagents that these should after importation in solid or concentrated form be kept previously to use in these conditions.

We next come to the investigation of the blood, the most important subject of all in the tropics. The methods of examination of fresh blood are fully set forth, that of dried films and their fixation is detailed, and the best method of staining is pointed out. Dr. Daniels next passes on to the detailed examination of the various parasites found in the blood, such as the protozoa of malaria, the trypanosomes, the bilharzia, and the filaria. With regard to malaria, it may safely be said that no clearer or more lucid exposition of this subject is extant, whilst the same thoroughness and exposition of detail characterise the account of the examination of the other parasites, the whole subject being completed by the information given as to the methods for demonstration of the presence or absence of the specific agglutinins causing the agglutination of the corresponding micro-organism. Dr. Daniels has enlisted the services of Mr. Theobald in the description of the various diptera; the reader is taught next how to prepare the mosquito for demonstration, whilst its anatomy and the methods of its dissection are minutely given. The next chapter deals with the demonstration of the development of malaria parasites in mosquitoes. Their eggs and larvæ are detailed and the subject is concluded with an account of the excellent mosquito-box devised by Dr. Louis Sambon for transmission of infected mosquitoes.

The matter of pigmentary deposits is fully entered into, as are also the subjects of "cloudy swelling," "fatty degeneration" (so important a factor in many tropical diseases, such as yellow fever and ankylostomiasis), "amyloid degeneration," and "fibrous degeneration." The examination of the fæces receives complete notice and especially valuable is the description of the various ova of parasites; some excellent differentiating points of the various species met with are given. In the next chapter the facts relating to the examination of the urine are dealt with. A very useful exposition follows on the subject of bacteriology in the tropics and in this chapter we find the difficulties experienced by workers in those regions on this subject lessened as much as possible. The practical experience of the author is well shown by his statement concerning the difficulty attending the making of nutrient broth in the tropics and he recommends meat extracts as efficient substitutes. The whole of this part of the subject is treated in a manner which will be found of great value to anyone engaged in investigating bacteria in hot climates. The concluding chapter of the work is taken up with the means of measuring the various eggs, parasites, and normal and subnormal cells. A useful appendix of the instruments and reagents necessary for laboratory work completes the volume. Finally we may draw attention to the excellent plates illustrating the quartan and tertian parasites, the various corpuscles of the blood, the trypanosomata, the spirillum, and the amœba coli.

We consider this work a most valuable addition to medical literature. There is no "padding" in its pages but each chapter reveals the large experience of the author

in the subjects of which he treats. The London School of Tropical Medicine sustained a great loss when Dr. Daniels left it to take up the post of director of the Institute for Medical Research in the Federated Malay States. In this case most assuredly what was the loss of the school was the gain of Malay.

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*Post-mortem Pathology: A Manual of Post-mortem Examinations and the Interpretations to be drawn therefrom.* By HENRY W. CATTELL, A.M., M.D. With 612 Illustrations. London and Philadelphia: J. B. Lippincott Company. 1903. Pp. 372.

THIS work is a practical treatise on the methods of performing post-mortem examinations and includes some account of the morbid conditions of the organs usually found. The author in his preface states that it has been written "for those who ought to make autopsies but do not, and for those of whom such investigations are required, as medical students, hospital interns, and coroners' physicians." It is obviously the outcome of a very large practical experience of post-mortem work and those sections of the book dealing with instruments, technique, the removal of organs, and the preparation of specimens are useful, practical, and clear. The general methods recommended and described are those used by most German and English pathologists, and the author acknowledges his indebtedness to Orth's "Pathologisch-Anatomische Diagnostik" and to Nauwerck's "Sections-Technik." The descriptions of routine incisions and manipulations are full and lucid and are most lavishly illustrated; thus there are nine large illustrations of the method of removal of the brain and seven of removal of the spinal cord. The author insists on the importance of systematic examination of organs and of descriptive records of the appearances observed, and we quite agree with him that printed forms are cramping to description, though often useful. The chapter devoted to the description of post-mortem instruments and the methods of using them is good, while that dealing with the care of the hands and the treatment of post-mortem wounds contains some useful hints and warnings. In the chapter on the examination of the exterior of the body the author suggests that when surgeons remove organs from patients they should tattoo on the skin near their incision the initial letter of the part removed followed by the sign minus, for the information of other surgeons under whose care the patient may subsequently pass, or, perhaps, of the pathologist—a suggestion which we imagine will hardly commend itself to surgeons or to their patients. There is a chapter on comparative post-mortem examinations, with directions as to the methods of examining the viscera of horses, oxen, swine, dogs, and cats.

The chapters dealing with the pathological conditions of the organs are disappointing when compared with those devoted to methods. The descriptions are in nearly all cases brief and scanty, and in many comprise little more than mere lists of the conditions affecting the organ under consideration. There are no illustrations of morbid organs and we cannot but feel that some of the illustrations so lavishly allotted to the methods might with great advantage have been used for this purpose. Moreover, at the commencement of the account of each morbid condition is given a numbered list of causes considered rather from the clinical than from the pathological standpoint, which seems somewhat unnecessary in a work of this kind. The brevity of description of diseased organs seriously detracts from the value of the book. Thus, for example, only one page is devoted to the description of all the varieties of pulmonary tuberculosis, and from too much conciseness incomplete and misleading statements arise; for instance, in the description of lobar pneumonia we find, "Lobar pneumonia occurs in adult life, in males, in infectious diseases, in alcoholism after exposure to cold and wet"; and again: "Usually the right lung is affected, the process being confined to the lower lobe," from which it might be concluded that pneumonia was unknown in women and children and never attacked the apices.

The literary style cannot be commended and the book shows evidence of hasty preparation. Repetition often occurs, sentences are frequently clipped to mere phrases, and misstatements or misprints are not uncommon, among which may be mentioned "the secretion of the thymus," "caput of Medusa," and "chronic involvement of the stomach" for what is presumably "chronic engorgement." "Secant" for pathologist is new to us, while the frequent use of the word "posted" to indicate the performance of a post-mortem examination, though possibly a convenient colloquialism, as the author avers, is not elegant and, to say the least, is ambiguous.

The illustrations are good and it is to be regretted that the descriptive sections of the book are not up to the excellent level of those devoted to pathological methods.

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## LIBRARY TABLE.

*Aids to Physiology.* By PEYTON T. B. BEALE, F.R.C.S. Eng. London: Baillière, Tindall, and Cox. 1903. Pp. 239. Price 3*s.* 6*d.*—This little book is founded on the "Aids" written many years ago by Professor B. Thompson Lowne whose work though, like the present one, small in compass contained in a compressed form a considerable quantity of information. Mr. Beale has made many minor additions in nearly every chapter but especially in that devoted to the nervous system, making it more in harmony with recent advances but not materially altering the character of the work which will be found a useful reminder of many facts to the student who has diligently attended the lectures and the demonstrations that are now given in every medical school. It should only be used as a reminder and should not be regarded as a book from which physiology can be learned even for an examination.

*Twentieth Century Free Trade: A Non-political View of the Question.* By E. H. SKRINE, B.A. Oxon., Planter, Trader, and Agriculturist. London: Simpkin, Marshall, Hamilton, Kent, and Co., Limited. 1903. Pp. 27. Price 6*d.*—The author of this pamphlet, which, he states, has reached a second edition, calls our attention especially to the portions dealing with his censorship of tea. He deprecates the over-taxation of a "necessary beverage—tea" and thinks that the Government should have appointed "one or two" tea experts as censors with a free hand to examine any lots of tea of suspected quality imported and to veto the landing of them if pronounced unfit for consumption, so that the medical outcry against tea might have become "devoid of foundation." Whether tea is a "necessary beverage" is questionable, but we are of opinion that all foodstuffs intended for human consumption and unfit for it should be effectively condemned as soon as possible. Thus we are mainly in accord with Mr. Skrine but we think that some of his other statements require modification. For instance, he states that "tea as an industry is practically limited to India and Ceylon." With this we cannot agree. So far as the United Kingdom is concerned, of the six pounds per head per annum consumed little more than one-third of a pound is Chinese; nevertheless, there are many persons to whose taste the delicate and distinctive flavour and quality of China teas appeal. In a report to the House of Commons in 1818 it was stated that millions of pounds' weight of sloe, liquorice, and ash-tree leaves were every year mixed with Chinese teas in England, but *tempora mutantur nos et mutamur in illis.* We may digress

to say that Mr. Skrine advocates the establishment of a revised and equitable schedule of food taxes which shall remain unaltered but, as we have said, times change and necessities change, and we would ask the author his own question, "Is not this world one continuous change and revival?" The author states that "excess of wealth without specific duties to employ that wealth on becomes in the hands of a weak or idle man as much a disease as fat in the body is a disease." But then we are not willing to allow that fat in the body is always a disease. A writer in Quain's dictionary says, "It is an excellent packing material in the body, being light, soft, and elastic." We can perhaps guess what Mr. Skrine means but in a discussion of this kind terms should be carefully chosen to avoid confusion. For instance, Mr. Skrine also asks on p. 10, "Has the last remnant of protection been banished from our fiscal system when we have just seen reimposed and again withdrawn a war tax on the bread of the people?" On p. 13 he says, "The late Boer war duty did not affect the price of the loaf at all." It is difficult therefore for us to see how it taxed the "bread of the people." Reverting to the subject of tea, we will not say, however, that a discussion of the duty on tea is unimportant as it was the duty imposed on tea in America in 1767 which was one of the causes of the revolutionary war which ended in the independence of the United States.

*Knowledge Diary and Scientific Handbook for 1904.* London: *Knowledge* Office. Price 3*s.* net.—This excellent diary and scientific handbook is now in its fourth year of publication and will be found of great use by students and workers in almost any branch of science. The size of the book is six inches by nine inches and a blank page is apportioned to each day of the year. Space is provided for monthly notes, letters received and despatched, cash account, and memoranda, as well as for an index to the diary. The letterpress consists of practical articles by competent writers on astronomy, microscopy, natural history, meteorology, and optics. Celestial phenomena are adequately dealt with and there are a number of maps showing the night sky for each month of the year and the paths of the planets, with a descriptive account of the constellations and the principal stars. Not the least useful part of the book consists of the tables relating to money, measures, specific gravity, and such like things, items which the busy man sometimes forgets for the moment. A photoprint of Charles Darwin forms a frontispiece.

*Diaries for 1904.* John Walker and Company, Limited, Farringdon House, Warwick-lane, E.C.—These well-known diaries are an *édition de luxe* without being expensive. Those for 1904 are quite up to the usual high standard of excellence. The Golfer's Diary is likely to be useful to those who take an interest in this popular pastime. It contains in a concise form the rules and etiquette of the game. Full particulars of the varieties and prices of the diaries were included in the list of "Books, etc., received," in THE LANCET of Dec. 5th, p. 1627.

*The Professional Pocket-book or Daily and Hourly Engagement Diary for 1904.* Rudall, Carte, and Co., 23, Berners-street, W.—This useful diary is constructed according to the plan of the late Sir Julius Benedict and has what is commonly known as "a week in an opening." The "opening" is divided into seven columns each headed with a day and at the left margin of each page the hours from 8 A.M. to 8 P.M. are ranged. The diary for the year is divided into three portions each of which can be inset into a leather cover with elastic band. This diary is particularly intended for registering professional engagements and we think that it will commend itself to every professional man who likes to be precise and methodical in all his ways.

## JOURNALS AND MAGAZINES.

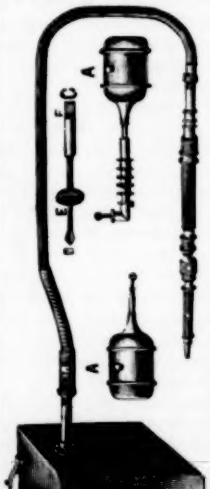
*The Practitioner.*—The December number of this magazine starts with a most attractive contribution from the pen of Dr. G. H. Savage. This is a lecture on the Mental Disorders associated with Decay and, like everything that Dr. Savage writes, it is full of interesting and *apropos* cases and anecdotes. Dr. Savage has the rare gift of presenting lightly the teachings that have only been gained by long and deep experience. His readers are nearly as much entertained as they are instructed. The *Practitioner* this month has other admirable articles. Mr. B. G. A. Moynihan discusses the question of Operation in Cancer of the Stomach. He quotes many foreign statistics. The conclusion arrived at is that ten months' longer life may be expected from gastrectomy than from gastro-jejunostomy. Articles by Dr. G. F. Still upon Diseases of Children, Dr. A. S. F. Grünbaum on Immunity, and Mr. Herbert S. French upon Clinical Examination of Gastric Contents are all worthy of perusal.

*Pall Mall Magazine.*—The Christmas number of the *Pall Mall Magazine* contains a great deal of readable matter if no particularly striking contributions. "Blue Roses," by Netta Syrett, is a pretty and humorous fairy story, with excellent illustrations by G. N. Sime. The Rebuilding of London, by "C. M.," illustrated by H. Fitton, forms an interesting lament over the hourly increasing destruction of old London, while the description of Lansdowne House, by E. M. Jessop, reveals the interior, with the agency of good photographs, of one of the stateliest of English domestic palaces. A causerie by W. L. Alden and stories by Fielding Hall and A. A. Vachell make for entertainment, but stories by G. B. Burgin and H. B. Marriott-Watson are not so happy.

# New Inventions.

## A NEW PERFORATOR FOR SURGICAL AND DENTAL OPERATIONS.

THE instrument of which we append an illustration was invented by M. S. Bercut who is surgeon-dentist to the École Polytechnique, Paris, in collaboration with M. A. Donat who was formerly a pupil at the School of Horology at Cluses. It was exhibited at one of the November meetings of the Society of Sciences in Paris by M. Lannelongue. The essential parts of the apparatus are a metallic box containing a clockwork movement which is made in two forms A and B, A being the smaller and more portable. To this can be adapted a stem C which will carry drills of various kinds, one of which is shown at D, fitted to a stem, E F, a small saw, polishing brushes, or discs. The form B being larger and more powerful than A carries an elastic adapter to which the drill or other tool can be fitted. So rapid is the rotation and so powerful is the action of the drill that the mastoid cavity, the frontal sinus, or the maxillary sinus can be opened in two seconds, while the cranial cavity can be opened in six seconds. Owing to this rapidity no anæsthetic other than a purely local one is necessary, while the extreme portability of the apparatus makes it easy for the dentist or the surgeon to operate at the patient's own house.



# THE LANCET.

*LONDON: SATURDAY, DECEMBER 12, 1903.*


## Medical Science and Imperial Responsibility.

To the man who thinks, to the man who reads the lesson of the world's growth aright, conquest means something more than the din of war, the fall of cities, and the guerdons of victory. The processes by which a civilised state makes for itself "the bounds of empire wider still," he knows to imply not merely the organisation of armies, the exposition of military genius, or even the successful propagation of religious creeds or the arrangement of advantageous political and commercial conditions. He feels that conquest means more, much more, than all these things. The acquired territories can only be brought into moral and material line with the central government if the new citizens can be helped to enjoy the natural gifts of their soil by being helped to combat its natural drawbacks. Capture must be made of more than cities. The expansion of territorial limits, the subjugation of hostile or savage states, is only part of the enlightened man's ideal of conquest. Capture and subjugation must be attempted of the physical conditions of the annexed land.

Three addresses have been recently delivered to important audiences in which this broad conception of conquest is well illustrated. Sir PATRICK MANSON, at the London School of Tropical Medicine; Professor RONALD ROSS, at the opening of the winter session of the Medical School of Anderson's College, Glasgow; and Dr. P. C. E. TRIBE, at the Egyptian Government School of Medicine, Cairo, all spoke with eloquent appreciation of the true meaning of empire. Professor ROSS, on the fostering ground of DAVID LIVINGSTONE and WILLIAM MACGREGOR, delivered an address worthy of their examples, his words being directly calculated to quicken the enthusiasm of his audience whether he was appealing to the unlearned imagination of medical students or to the deliberate consideration of mature practitioners. He claimed good reason for regarding the relation of medical science to the spread of empire as the paramount medical theme of the moment and he justified his claim by cogent argument. We are at a stage in the world's affairs when the great civilised nations, feeling the effects of crowding throughout the temperate regions of the earth, are overflowing into others. The current draws with it a large number of medical men whose duty and concern it is to study the novel conditions of life. They have to point the way in which perils of environment, menacing existence itself, may be overcome so that life may be rendered in the first place possible, next safe, and lastly comfortable. The new country, where the first and the second of these two things have been accomplished, may be considered to be conquered in the fullest sense, which is another way of saying that if science does not lend her helping hand the skill of the general, the tact of the diplomatist, and the energy of the trader will all fail to result in effective empire. The thing is so obvious and yet so little, so very little, realised by the world. What is the most powerful enemy of armies? With the episodes of the South African campaign fresh in our memories, a campaign in which not a few lives were lost by regrettable incidents in the field, we need scarcely ask the question. Even with the comparatively enlightened medical measures of to-day the proportion of victims claimed by disease makes destruction at the hands of a human enemy trivial. To take a still broader view, what is it that has kept the tropical zone of the world, comparatively speaking, barbarous? Why are tropical America, tropical Africa, and much of tropical Asia not open to the advent or the benefits of civilisation? Africa, with a trade wind to its very shores, with valuable natural resources, and with gigantic fertile areas to set against its sands and morasses, long ere this, said Professor ROSS, should have been a second India. The prosperity of India is not, we fear, enormously in evidence, but at any rate there is no doubt that Central Africa, instead of being the darkest land on the face of the earth, would have been peopled, cultivated, and civilised up to something approaching the standards of other countries had it not been found impossible for the white man to live there in comfort and safety and very often impossible for him to live there at all. Disease has kept back the clock of progress. The condition of Egypt illustrates the reverse of this story and affords a signal proof of the fact that unless science aids the conqueror their labour is but lost who annex new lands. Of course, Egypt is not truly tropical or a naturally unhealthy country, but it is, to put it mildly, a hot district where till lately sanitation was not practised. Dr. TRIBE, in his address at the Egyptian Government School of Medicine, was able to speak forcibly of the results that had followed in the land of the PHARAOHS from attention to the principles of medical science. In Egypt medicine is seen to be the recognised support of progress. The spying out the land for its physical and medical disabilities has been done, the advance work necessary to render existence possible for the main armies of civilisation has been carried out, and in Egypt we find science, especially medical science, maintaining these armies by reducing the losses inflicted upon them by epidemic disease. Cholera and small-pox rather than malaria and yellow fever are the foes to be feared, and science has proved its ability to offer effective resistance.

The third address, which brings before us the full responsibility of our imperial system, is that which was delivered at the London School of Tropical Medicine on Monday last by Sir PATRICK MANSON. In summarising the achievements of the school Sir PATRICK MANSON showed that the education of a large band of eager students in the problems of tropical pathology has had already a powerful influence upon the position of the mother country in relation to her colonies. "Where two or three men," he said, "took a languid interest in tropical disease some five or six years ago, a whole army of eager investigators has arisen, mainly composed of men educated or inspired by the London and Liverpool schools of tropical medicine." Taking grave risks, and inspired by love of humanity as well as by honourable personal ambition, these students have gone forth into all

parts of the world, spreading with zeal the knowledge that they have and acquiring with greed more knowledge as they go. We have recorded from time to time their successes, and proofs of their arduous work can be found in many places in our columns this week. It is not easy, in fact or imagination, to set a bound to the value of such labours, and the medical profession as a whole has seen with pleasure that the nation is beginning to appreciate these labours at their right price. The public is now alive to the part that is played by scientific medicine in welding together the empire.

## Natural Science and the Medical Profession.

THE question which for the last two or three years has been debated between the General Medical Council and some of the licensing corporations—the question, that is to say, of the amount of preliminary scientific training required by medical students, and of the stringency of the examinations by which the consequent attainments should be tested—is no doubt one of great importance in relation to the subsequent acquirement and application of distinctively medical or surgical knowledge; and it is chiefly from this point of view that it has so far been considered. The Council, in our opinion rightly, regards both the accepted modes of instruction and the accepted standards of proficiency as altogether insufficient, and the corporations, in the face of the reports recently made to the Council by its appointed inspectors, can hardly dispute the soundness of this conclusion. The difficulty of so acting upon it as to bring about an effective reform seems to depend mainly upon the tendency of the corporations to resist what they regard as the dictation of the Council, and to assert their own right to decide upon the conditions under which their qualifications shall be granted. The Council, on the other hand, conceives that its statutory right of reporting an insufficient examination to the Privy Council is one that should be exercised on fitting occasions, even if only to obtain relief from the responsibility of yielding a tacit assent to conditions of which it disapproves. On the question whether the present occasion was a fitting one, whether, that is to say, the Council should ignore the expressed intention of the corporations to improve the impugned examinations, and should deal according to statute with the defects shown to be existing, or should wait to see to what extent the promised improvements were of practical utility, the Council was so equally divided that the amendment in favour of waiting was only carried by 16 votes to 12, with two absentees, and was only carried as a substantive motion by 14 votes to 13, with three absentees. It may fairly be inferred that the patience of the Council is nearly exhausted, and that, unless the promised reforms, both in the examinations and in the methods of instruction leading up to them, prove both speedy and effective, we shall witness the deplorable spectacle of litigation before the Privy Council in respect of alleged deficiencies in the conduct of medical education or, more correctly, in the conduct of certain preliminary studies, the value of which the public is becoming year by year more and more able correctly to appreciate.

The controversy so far has turned in great measure upon the assumed or asserted rights of the chief parties to it, but it is, nevertheless, of a much deeper and more permanent interest in relation to the position of the profession in the estimation of the public. We once knew a clergyman who, after residing many years as a Fellow of his college, at last accepted a living in the country. On taking possession he found that his predecessor had let off most of the glebe to a neighbouring farmer, but had retained in his own hands a small portion, for the cultivation of which this same farmer was accustomed to supply implements and labour. The farmer called upon the new rector and obtained his consent to the continuance of the described arrangement; but having done so he still lingered, after the fashion of one burdened by thoughts which he hesitates to impart. At last, taking his courage in both hands, he announced that WILLUM DICKER would come next morning to plough the four-acre close, and thus continued his discourse: "WILLUM will be very proud if your reverence were to go through the close and pass the time o' day; but whatever you do, sir, don'tee say nothin' to WILLUM about ploughin' or sowin'. You see, sir, he hath bin ploughin' and sowin' all his life, and he do know all about it, and if your reverence was to say a word he'd see in a minute as you know nothin' about it, and if WILLUM once gets to think as you know nothin' about ploughin' or sowin' he'll never take heed to your sermons." *Mutato nomine de medico fabula narratur.*

In respect of scientific knowledge the present generation has witnessed a change which might almost be described as a revolution; and it is very doubtful how far the character and extent of this change have as yet been realised either by the medical corporations or by medical practitioners. Only a few years ago medical men were pre-eminently the scientific members of the community and were possibly sometimes credited with even more profound knowledge than they possessed. They constituted the only scientific profession, the clergy, as a rule, being eminently unscientific, and the bar being opposed to any science which might for the moment be hostile to the interests of a client. Within the memories of men of scarcely more than middle age, the applications of chemistry to agriculture and to manufactures, and the applications of electricity to telegraphy, to lighting, and to locomotion, have called into existence large classes of non-medical persons who are accomplished in these branches of science, and among whom the speech of a smatterer would betray him. The medical profession could fall into no more fatal error than to neglect the change in its relative position which the upspringing of these new professions has brought about, unless it were that of remaining content with a slight and superficial knowledge of matters bearing upon their proper pursuits, and concerning which many of their patients would be competently instructed. In so far as the art of healing rests upon the judicious application of physical science to the conditions of the sick, or in so far as the doctrines of physiology rest upon the control of vital operations by physical forces, the medical practitioner, if he is to hold his own among the members of the many new

scientific callings which have sprung into existence around him, must have sufficient knowledge to be able to discuss physical questions in the light of the latest discoveries and to display a clear comprehension of physical phenomena. If he be called upon to speak of the chemistry of digestion in the house of a chemist, or of electrical treatment in the house of an electrician, it is necessary for him to be sufficiently at home in either subject to be able to command the confidence of the skilled persons among whom he is thrown. Superficiality of acquaintance with the matter in hand would not only be detected, but would be likely to lead to distrust of his capacity in matters beyond their ken. The "WILLUM" of our anecdote is, after all, a type of human nature, and most people are prone to gauge the capacities of others by the measure of their own. A competent electrician, for example, would regard a medical man who prescribed or discussed electrical treatment, and who at the same time manifested imperfect acquaintance with the principles of the science, very much as he would regard an artisan who was capable of hanging an electric bell by rule of thumb but who could not safely be relied upon for any work in which a knowledge of principles was required. He would be likely also to measure the quality of his medical and surgical knowledge by the standard of his electrical knowledge, and to extend to him for the future a very modified form of confidence. On such grounds as these, and even apart from the important practical bearings of the physical sciences upon the prevention and cure of disease, we would urge upon licensing bodies the pre-eminent necessity of so conducting medical education that the practitioners of the future may be adjusted to what is practically a new environment of learning and may be able to sustain the banner of their calling amid the press. A reputation for contentment with a smattering of science would be fatal to the status of the medical profession, and no regard to the apparent temporary interests of a corporation should be permitted to lead up to such a catastrophe.

## The Revision of the British Pharmacopœia.

IT is now more than five years since the present Pharmacopœia was issued, and the time seems fully ripe for taking cognisance of the various criticisms that have been made and of the numerous researches which have been conducted to test the accuracy of the various statements therein or to suggest improved methods. Notices of these criticisms and researches have hitherto appeared in various contemporaries but they have necessarily been somewhat scattered and were not therefore readily accessible. Many researches have been made at the instigation of the Pharmacopœia Committee by workers selected on account of their special acquaintance with the subjects upon which information was desired; other large groups of researches have been conducted in the research laboratory of the Pharmaceutical Society at the suggestion of a joint conference of representatives of the Pharmacopœia Committee of the General Medical Council and representatives of the Pharmaceutical Societies of Great Britain and Ireland; other researches have been made by numerous persons interested in chemistry and pharmacy. Many valuable reports have therefore been in the hands of the Pharmacopœia Committee, ready for consideration or adoption when the task of revision was commenced, but others which appeared in the columns of various journals were in danger of being overlooked unless some serious effort was made to focus all information relating to the Pharmacopœia in some convenient form. Realising this danger, and also the importance of intrusting the compilation to an independent chemist or pharmacist, the Pharmacopœia Committee of the General Medical Council instructed Mr. WILLIAM CHATTAWAY of the Society of Apothecaries to collect and to abstract those published criticisms, researches, and suggestions which he deemed worthy of serious consideration. This Digest has now been published, and will probably facilitate not only the labours of the Pharmacopœia Committee but also those of all who are interested in the progress of pharmacy, since in the brief space of 72 pages we find summarised all really important suggestions, while in each case careful reference to the source of the original papers is given. An alphabetical arrangement has been adopted in harmony with that in the British Pharmacopœia; hence anyone conducting original researches can ascertain at a glance what progress has already been made or what modifications of official statements have hitherto been suggested.

Many criticisms which appeared very shortly after the appearance of the Pharmacopœia were inevitably based upon a conservative spirit which resented innovations; some, indeed, betrayed indications of hasty judgment or even of rapid and faulty observation, and these were dealt with in a report by Professor JOHN ATTFIELD who had edited the Pharmacopœia and who noted and rectified any minor misprints or errors to which attention had been directed. The greater part of the serious investigations dates from the beginning of the year 1899 and this has therefore been selected as the earlier limit of the Digest. Mr. CHATTAWAY, in his preface, states that the criticisms bear mainly upon the composition and assay of drugs and galenicals, while the criticisms dealing with the botanical features of drugs are remarkably few. Both these things were to be anticipated, since the responsibility for the accuracy of botanical features in the Pharmacopœia was intrusted to Sir W. T. THISELTON-DYER, director of the Royal Botanical Gardens, Kew, and to Mr. E. M. HOLMES, curator of the Pharmaceutical Society of Great Britain. On the other hand, although the composition and assay of drugs were largely the result of suggestions from a committee appointed by the Pharmaceutical Society of Great Britain, and therefore presumably represented accurately the state of knowledge in 1898, these subjects are more continuously liable to modifications, due to improvements in pharmaceutical processes and the minute daily researches to which they are submitted. It is evident from consideration of the Digest that it contains much information in a form immediately available for inclusion whenever the revision of the Pharmacopœia is undertaken, but it is also clear that some of the criticisms and suggestions will need verification and that certain new investigations must be initiated before the present authoritative statements can be set aside or amended. Inasmuch as the majority of the criticisms are evidently the result of private enterprise, it may

be hoped that the publication of this digest will further stimulate private research towards their confirmation or refutation. The progress of pharmacy has everything to gain from such private work when conducted with obvious care and attention to detail, and it is probable that the researches will be best conducted by those who feel personal interest sufficient to prompt them to select their own subjects of investigation. Some few criticisms, however, must necessitate research in well-appointed laboratories fully equipped with apparatus and with assistants who can devote their whole time and energy to the work, and since a large part of the expense of these must fall upon the General Medical Council it is to be feared that, unless great care is exercised, they may be so costly as ultimately to involve an increase in the price of the Pharmacopœia. Happily the need of such expensive researches does not seem to be very great to judge from the digest at present before us; minor errors can be readily amended, matters of opinion can be referred to competent authorities, and numerous suggestions apply to drugs or galenicals which, it is to be hoped, will be excluded from the next Pharmacopœia.

While Mr. CHATTAWAY is to be congratulated upon the restraint and brevity with which he has accomplished the arduous task of collating and compressing into such small space so much valuable information, further congratulations are due to those responsible for the British Pharmacopœia upon the labour which must have been expended in producing a volume which, published "by authority," has so successfully withstood the numerous assaults provoked by all authoritative statements.

## Longevity.

To be truly interesting a lecturer should always draw largely from observation. That he should be well-equipped in the literature of his subject is an essential but unless the facts previously recorded are to fall flat when again passed through the revivifying process of redelivery they must be illumined with apt illustrations drawn from the speaker's experience, and the interest is intensified when this experience is personal instead of being derived from observation of others. For these reasons Sir HERMANN WEBER'S lecture recently delivered before the Royal College of Physicians of London on Means for the Prolongation of Life merits special attention, although, as was to be expected, it disclosed no new royal road which would infallibly solve all difficulties. Quite early in the lecture Sir HERMANN WEBER instanced his own case as an example of the defeat of hereditary tendencies and it is therefore legitimate to remind our readers that he obtained his medical degree so far back as 1848. Sir HERMANN WEBER'S parents both died before they attained the age of 60 years, so that he spoke at any rate as one who had discounted any influences of heredity towards short life. These personal details are mentioned for the consolation of those who might be depressed by his remarks on the advantage of belonging to a long-lived family and the power of influencing heredity. Well-selected marriages, from which so much has been hoped by certain writers, must always fail to be consolatory to the individual who has to take his parents as he finds them, while a parent must be sanguine if he hopes to influence the marriages of his offspring by prudential considerations. Still, the tendency to vascular degenerations and to surrender to the invasion of certain bacilli must be regarded as hereditary, and there was some solace in finding that in the lecturer's experience such dangers may be evaded by personal care.

It is to the rising generation that Sir HERMANN WEBER'S cheery optimism will mainly be welcome since he laid so much stress upon the importance of exercise, of the week-end holiday, and of the summer holiday, a point of view which he shares with all healthy minded students. The chief exercise extolled was that of walking, and he advocated this in all weathers; but almost equal importance was attached to artificial respiratory exercises; and although as years advance these may be carried out with due solemnity in accordance with instructions given at some length, youth will hinder their earlier adoption so long as natural respiratory exercises can be obtained in football and in cricket. The question of the amount of food which may judiciously be taken was one upon which many quotations were made all tending in the general direction of moderation, the avoidance of excess, and the reduction of meat and flesh food. Similar restrictions were placed upon alcohol, "the most frequent cause of crimes and of the ruin of many families," though a quotation admitted that a "few hard drinkers were amongst the long-lived." Tea, coffee, and cocoa were upon the whole kindly treated, their power of disturbing digestion under some conditions was recognised, while their benefits were extolled. Similarly with regard to tobacco, very little guidance was afforded and no hard-and-fast line was drawn. Tobacco was said to be a means of enjoyment, to soothe nervous irritability, to make men look more contentedly on their troubles, and in excess to produce bad effects. This we hold to be common experience, although so judicial an attitude may have been unacceptable to many who anticipated that tobacco might be condemned. The avoidance of constipation by modifications of diet occupied a great deal of attention and the comparatively simple measures by which discomforts might frequently be minimised without resorting to drugs formed also an important part of the address. The most interesting part of the lecture was, however, that devoted to the nervous system in its influence upon the body generally. Sir HERMANN WEBER said that degeneration of the vessels of the brain, in spite of hereditary tendencies, can be retarded or even avoided by judiciously arranged mental work and occupation, in conjunction with great moderation in food and stimulants and with regular physical exercise. He supported his contention by several instances from his own experience and encouraged the cultivation of cheerfulness and a happy and placid mind. The amount of sleep he allowed would scarcely satisfy the instinctive craving, and still less in accord with custom was his recommendation to get up at the same hour daily, even after exceptionally late hours of work or a poor night's rest. Here we believe his advice to be sound generally; but idiosyncracy plays a great part in the hours of rest required by an individual, and we are certain that his dictum could not always be followed with advantage.

While expressing concurrence with the principles laid down by Sir HERMANN WEBER there are still a few

uneasy questions left unsolved. He assumed that the prolongation of life is to be desired and he emphatically expressed his conviction that it is a mistake to consider that ordinary work wears out the organs sooner than idleness or great restriction in work. He supported his contention by numerous examples of hard workers who have retained unimpaired intellectual faculties to very advanced ages. He even quoted CICERO who held that "the intellectual powers remain in the old provided study and application are kept up, and old age need not be inactive, indolent, and drowsy." Still, we venture to question whether the majority who have witnessed many death-bed scenes so often preceded by painful circumstances really desire to live to a great age. If afforded the power to choose would not many prefer, to instance examples from the lecture, to die near the age of 60 years from apoplexy rather than to live on to 70 or more to struggle with heart disease and pneumonia? The former mode of death is less painful, more merciful. We have to deal with generalisations rather than with exceptional instances and unhappily at present there is still a lurking feeling that the last scene of all is usually

> "Second childishness and mere oblivion;
> Sans teeth, sans eyes, sans taste, sans—everything."

Sir HERMANN WEBER thinks it need not be anything of the sort and his rules of life forcibly recall those long since playfully formulated in "Alice in Wonderland." Exercise of the brain and of the limbs and due development of the muscular strength of the jaws formed the main secrets of longevity imparted by the evergreen sage to the inquisitive youth in LEWIS CARROLL'S delightful rhyme. Sir HERMANN WEBER has added to the old man's list in serious scientific terms but his conclusions might almost be summarised in three words—moderation, cheerfulness, and exercise.

# Annotations.

"Ne quid nimis."

## A STANDARD FOR LEAD GLAZES.

MORE than two years ago Lord James of Hereford was appointed arbiter to decide between the views of the Home Office in regard to protecting the lives and health of the workpeople in the pottery trade and the representations of the manufacturers. The proceedings were brought to a somewhat sudden termination in November, 1901, by Lord James declaring that as it was shown that lead poisoning had greatly decreased under the last rules of the Home Office there was no need to impose fresh ones, at all events for the moment, as to the use of "fritted" lead or as to the examination of adults. These questions he considered might be postponed for 18 months and would be then again postponed if necessary. While we were aware that any determination then and there to enforce the use of standard lead "fritts" would have been a source of temporary inconvenience to the industry, yet we expressed the opinion that in the face of the conclusions to which the Government experts, Dr. T. Oliver and Dr. T. E. Thorpe, had come, the adoption of definitely "fritted" lead should not be delayed and that no time should be lost in affording protection to those engaged in pottery manufacture. We now learn that Lord James has recently signed his final award in which a standard for "fritts" is definitely laid down. It is generally provided in a new rule (2) in this award that after Feb. 1st, 1904, no glaze shall be used which yields to a dilute solution of hydrochloric acid more than 5 per cent. of its dry weight of a soluble lead compound calculated as lead monoxide when determined in the manner prescribed by the rule. In the original standard of insolubility proposed by Dr. Thorpe and Dr. Oliver, a maximum of 2 per cent. of soluble lead was suggested as a criterion of safety upon which glazes might be judged. The use of a glaze, however, which does not conform to a 5 per cent. limit is to be permitted after due notice has been given to the inspector of the district. This permission, be it remarked, is subject to the adoption by the manufacturer of a new schedule of compensation to employés who may be suspended on being certified as suffering from lead poisoning, and subject also to periodic examination of the employés by the certifying surgeon. China scouring is excluded from the processes dealt with by these regulations. Lord James, we think, has been very painstaking and impartial in dealing with this matter, for at the outset while he made up his mind not to interfere hastily with trade considerations yet he felt that his prime concern related to the particular questions of life and health involved in the inquiry. Certainly the manufacturers have had ample warning that legislation would sooner or later be directed towards enforcing the use of a lead compound of a definitely modified character, that in other words there would be a limit placed upon its solubility, and the limit suggested—namely, 5 per cent.—is a compromise between the views of the Home Office experts and those of the masters in the trade. The prescribed method of testing the solubility of the glaze is quite simple and such as can be easily conducted by any person possessing an average amount of intelligence. It is enjoined that "a weighed quantity of dried material is to be continuously shaken for one hour at the common temperature with a thousand times its weight of an aqueous solution of hydrochloric acid containing 0·25 per cent. of pure acid. This solution is thereafter to be allowed to stand for one hour and to be passed through a filter. The lead salt contained in an aliquot portion of the clear filtrate is then to be precipitated as lead sulphide and weighed as lead sulphate." This method is practically in a line with that adopted by some of the expert members of a committee appointed to inquire into the subject on behalf of the Home Office several years ago.

## THE REBUILDING OF ST. BARTHOLOMEW'S HOSPITAL.

IN our issue of Dec. 5th we wrote in a leading article to the effect that it is absolutely necessary that the scheme for the rebuilding of St. Bartholomew's Hospital should be one which might be final. We pointed out that it was certain that the ordinary citizen would not subscribe to a scheme which was imperfect. In confirmation of our opinion there appeared in the *Times* of Dec. 7th a letter dated Dec. 1st from Mr. Andrew Motion, a life governor of the hospital and the chairman of the Cannon Brewery. In it he says: "My pen and my purse will be used to frustrate St. Bartholomew's Hospital being ruined for all time. Should it, on the other hand, be decided to rebuild on Sir H. Burdett's plan or a similar one my firm will subscribe £5000, but if the patchwork and tinkered scheme be adopted not a sixpence." This sentence shows the opinion of one large business firm and we are certain that the other large firms in the City will take the same view. We may say here that we have received a letter from Messrs. Hubbard and Moore, architects, of Gresham-street, pointing out that according to modern views no hospital should have more than 50 beds per acre and they estimate that on this scale 700 beds would require 13½ acres and would cost in all £1,612,000, a sum which would be financial ruin. They therefore propose that the hospital should be rebuilt in two

portions, one on the present site and the other in the country, the lately acquired one and a half acres being sold to provide land and buildings for the latter. We cannot agree with this suggestion. Our own advice is once again to appeal to the Lord Mayor and to the governors of St. Bartholomew's Hospital to lay before the citizens at the forthcoming meeting on Jan. 26th, 1904, a large and generous scheme. Let the citizens at least be asked to procure a sum of from £800,000 to £1,000,000, and let the Lord Mayor assure the meeting that if the money be raised additional land will be bought and St. Bartholomew's Hospital rebuilt in a manner consonant with its traditions and with the history and traditions of the heart of the empire, and we cannot but think that the sum will be forthcoming.

## THE VALUE OF SYMPTOMS IN DIAGNOSIS.

Dr. J. Rose Bradford, in delivering the Purvis oration before the West Kent Medico-Chirurgical Society at the Royal Kent Dispensary, Greenwich, on Dec. 4th, took as his subject the Value of Symptoms in Diagnosis. After discussing the importance of the diagnosis of disease, Dr. Bradford went on to point out that it was essential in the treatment and in the prevention of disease for the malady to be recognised in its early stages and in what might be called its mild varieties. The accurate diagnosis of disease was essential for another reason—namely, it not uncommonly happened that under a given clinical description there were included a variety of separate pathological processes, and Dr. Bradford quoted ulcerative endocarditis as an example. The great majority of the many difficulties and uncertainties in the practice of medicine arose from imperfect or inaccurate diagnosis which very often depended on the present imperfect state of the knowledge of medicine but in some instances on a want of appreciation of the symptoms presented by disease. Many practitioners had become so impressed with the value of physical signs that it was not uncommon for a diagnosis to be made entirely from physical signs, the symptoms being almost neglected. Physical signs, as a rule, only gave information as regarded the anatomical seat of the lesion—they did not give necessarily information concerning its pathological nature, and many errors of diagnosis in disease arose from confusing those two distinct phenomena. The importance of the thorough study of symptoms must be at once granted when it was remembered that in a large number of functional diseases symptoms only were present. In many functional diseases the remarkable character of the subjective sensations complained of by the patient afforded a clue to the differentiation of the malady from organic diseases with which at first sight it might be confounded. One of the most important functional diseases of the nervous system in which the diagnosis had to be made in most cases entirely on the symptoms was epilepsy and more especially the anomalous form of epilepsy in which convulsions were absent, particularly *petit mal*. Continuing, Dr. Bradford pointed out that some of the most serious gross organic diseases might reach a very high stage of development and yet produce few, if any, physical signs. These diseases might be revealed only by the occurrence of symptoms which in some of the more fatal of them might be misinterpreted. The lecturer quoted hepatic cirrhosis as an example and observed that that disease might proceed to a very high degree of development and yet symptoms only might be present and these might not uncommonly be found to be referred to the stomach rather than to the liver. Further instances of maladies in the same category were gastric ulcer, affections of the cerebral arteries, and Addison's disease. Proceeding to the next class of disease illustrating his contention, Dr. Bradford quoted renal and biliary colic as affording good instances of organic diseases in which symptoms only might be present and where the differential diagnosis had often to be made almost entirely on the symptoms. The next point commented on by the lecturer was that of the onset of complications and in this connexion he observed that one of the most important subjects concerned with the study of symptoms was the information which they afforded of the onset of complications in gross organic disease. In many instances, doubtless, those complications were necessarily fatal but in others the only chance of saving a patient depended on the prompt recognition of the nature and cause of those symptoms. He gave as familiar illustrations of his contention the occurrence of perforation in enteric fever and in appendicitis where, if treatment were delayed until all the characteristic signs of the presence of gas in large amount in the peritoneum were present, the chances of successful interference would be very greatly diminished. Passing on to the discussion of symptoms as a clue to diagnosis of the nature of a lesion, Dr. Bradford gave the common occurrence of vomiting in cases of cerebral hæmorrhage as an illustration. The sudden onset of hemiplegia almost always raised the question as to whether a lesion was thrombotic, embolic, or due to hæmorrhage, and in a great many cases the history of the first symptoms, and especially, perhaps, the occurrence of vomiting, afforded conclusive evidence of the presence of cerebral hæmorrhage. Another symptom often throwing unexpected light on the diagnosis of disease was the numbness and tingling of the extremities so characteristic of neuritis and occurring as a very early symptom in that disorder. Dr. Bradford then entered in detail into the value of pain as a symptom and, after commenting on the significance of delirium, mentioned how dyspnœa in its varied forms was often of great assistance in arriving at a correct judgment. Dr. Bradford concluded an interesting oration by describing how the occurrence of symptoms might afford valuable indications for treatment, at the same time being in some cases the only means of making the diagnosis. So whether medicine was regarded from the point of view of diagnosis, prognosis, or treatment it was most important in all cases to pay great attention to the study of symptoms if success was to be achieved.

## NATIONAL PHYSIQUE AND THE EDUCATIONAL AUTHORITIES.

WE commend the attention of our readers to the thoughtful article which appears under this title in the current number of the *Guardian* from the pen of the Right Hon. Sir John Gorst. It will be remembered that Sir William Taylor, the Director General of the Army Medical Service, having presented a memorandum to Parliament calling attention to the deterioration in the health and physique of the men offering themselves as recruits for the army, a committee was appointed to advise the Government as to the propriety of appointing a Royal Commission to investigate the physical condition of the British population. Sir John Gorst points out that much information could be obtained from one source without awaiting the lengthened deliberations of a Royal Commission. Four-fifths of the child population of Great Britain come under the daily observation of public authorities and concerning these children the following two questions can be asked and answered: (1) What is their physical condition? and (2) What can be done by public authority to improve it? The Board of Education, the local education authorities, and the teachers could give, Sir John Gorst thinks, a complete answer to the first and a practical if incomplete answer to the second

question. There is no reason, says Sir John Gorst, why it should not be the duty of every class-teacher to make a daily inspection of the children in the class and to record and to report anything abnormal, such as hunger, nakedness, dirt, and disease. This daily inspection could be periodically supplemented and checked by the visit of a trained nurse and by such means it is suggested that we should soon learn whether we were degenerating or improving. With much of Sir John Gorst's words we fully agree, but we question whether the teacher is, as a rule, capable of giving the systematic help that is thus expected of him. He could report about clothing and to a great extent about personal hygiene; he could inquire about feeding; but disease would be beyond him save in its grosser manifestations. Medical examination of all school children upon some pre-arranged plan would be necessary before the information to be obtained from school authorities could be relied upon. If all teachers of the young were themselves instructed in physiology the position would be different. An address delivered at the University of St. Andrews by Dr. D. Fraser Harris at the beginning of the week and referred to briefly by one of our Scotch correspondents urged the necessity of the schoolmaster being familiar with at least the groundwork of physiology and Sir John Gorst's excellent paper teaches a similar lesson.

## CHRISTMAS ENTERTAINMENTS AND THEIR DANGERS: A WARNING.

FAR be it from us to detract in the smallest degree from the joys and amusements which are commonly indulged in at Christmas time for the sake chiefly of the little people. But previous experience has taught us unhappily that Christmas time is prone to bring a sad chapter of accidents (much sadder than usual because of their occurrence at a peculiarly joyous time) which with a little forethought might have been avoided. Perhaps it is in connexion with domestic theatricals that the worst accidents have arisen. Children and adults alike have been dressed up, for example, and almost buried in a profusion of cotton-wool intended to represent snow without the least regard having been paid to the ready inflammability of the material and without any precautions to keep it from coming into contact with a naked flame. Some most heart-rending scenes have resulted from this want of care and a very sad sequel to happy moments has been the consequence. It cannot be too well known that cotton-wool burns with the fierceness of spirit and that the flame is very hot and very difficult to extinguish. Great caution should also be exercised in regard to the drapery used for scenic purposes which should consist so far as possible, if not entirely, of non-inflammable or of not easily ignited material. There is again a similar danger connected with celluloid ornaments and toys. The celluloid ball is fiercely and easily inflammable and if it does not ignite something else and lead to an alarming conflagration it may itself inflict severe burns and injury. This warning is all the more needed, it seems to us, as so many toys are now made of this highly combustible material. The festive season is associated with many things bright and pretty in which danger may easily lurk. The painted doll may be pigmented with poison, the coloured candles on the Christmas tree have been known to be a source of arsenical poisoning at Christmas parties, while the sweets may not be above suspicion. We cheerfully admit, however, that there never was a time when colouring materials were as a rule so innocent in character as at the present, thanks maybe to the publicity given in our own columns to the practice at one time in evidence of using poisonous materials for this purpose. If to be forewarned is to be forearmed this little note may not be written in vain. We feel strongly that a warning of this kind is timely and we issue it not with the slightest desire to cast a wet blanket over a promised joyous time but in the sincere hope that this Christmas may not be marred by those sad occurrences which have occasionally marked previous festivals and which could have been avoided by taking care and by the application of ordinary intelligence as to the possibilities of danger.

## THE BALLACHULISH QUARRIES.

FURTHER proof reaches us during the week that the Ballachulish quarriers are determined not to yield on the question of their medical officer, and it seems clear that the mass of them, unless the directors of the company revise their opinion, will seek permanent employment elsewhere. The persecution, for it is nothing else of Dr. Lachlan Grant will not be endorsed by the men whom he has served well and whom he is desirous of serving further, nor are the men prepared to accept dictation as to what medical man they shall employ while the payment of the medical man is made by themselves.

## 5000 MIDWIFERY CASES IN GENERAL PRACTICE.

A NOTE on 5000 midwifery cases in private practice has reached us from a contributor who desires to affix only the initials "G. P." to his work. The note commences with an analysis of the cases as follows: cases attended, 5000; twins, 50, or 1 per cent.; triplets, 2, or 0·04 per cent.; transverse presentations, 74, or 1·48 per cent.; face presentations, 7, or 0·14 per cent.; placenta prævia, 17, or 0·34 per cent.; puerperal eclampsia, 6, or 0·12 per cent.; puerperal mania, 2, or 0·04 per cent.; ruptured uterus, 2, or 0·04 per cent; version, 66, or 1·32 per cent.; forceps, 326, or 6·52 per cent.; craniotomy, 1, or 0·02 per cent.; 306, or 6·12 per cent., paid no fees. Deaths occurred as follows: acute septicæmia, 2, or 0·04 per cent.; influenza (?), 2, or 0·04 per cent.; pyæmia, 1, or 0·02 per cent.; shock after craniotomy, 1, or 0·02 per cent.; ruptured uterus, 2, or 0·04 per cent.; puerperal eclampsia, 3, or 0·06 per cent.; post-partum hæmorrhage, 1, or 0·02 per cent.; total, 12, or 0·24 per cent. Other deaths not directly due to parturition: acute bronchitis, 2, or 0·04 per cent.; phthisis, 2, or 0·04 per cent.; cerebral hæmorrhage, 1, or 0·02 per cent.; puerperal mania and phthisis, 1, or 0·02 per cent.; total, 6, or 0·12 per cent.; total number of deaths, 18, or 0·36 per cent. All these cases were attended in the East-end of London and do not include those in which help was given to other practitioners or midwives. The number of cases of placenta prævia is small. In cases where the fœtus was not viable they would have been looked upon as miscarriages. Abortions and miscarriages in the East-end of London are too numerous to mention. The two deaths attributed to influenza occurred as follows. Both were attended by A one afternoon. In the evening he was prostrate with a sharp attack of influenza. Both cases ran a similar course. On the second day the patients were feverish, with pains in the back and the limbs; no rigors were present. On the third day the temperature rose to 104° F. and there were abdominal tenderness and sleeplessness. There was no milk and the lochia were scanty. The symptoms continued till the seventh day but the temperature dropped. One case was then seen by a specialist in gynæcology, who found no uterine, pulmonary, or cardiac physical signs. The diagnosis was influenza and the prognosis was favourable. That evening vomiting and delirium came on and continued till the eighth day, when death occurred. In the three deaths from eclampsia convulsions took place in one case three hours post partum, in the second 11 hours post partum,

and in the third before the os had begun to dilate. The patient who died from post-partum hæmorrhage was delivered by forceps at 8 P.M. She had had difficult labours previously and had always lost blood considerably. At 6 A.M. her friends sent to say that she was dead. There had been a good deal of hæmorrhage externally and the uterus was distended with blood. In the following series of monsters in each case the husband and wife were cousins: (1) miscarriage; (2) anencephalous monster; (3) living, normal; (4) hernia cerebri, five fingers and six toes on each hand and foot, double talipes varus, cleft lip and palate; (5) normal, living; (6) normal, living; (7) anencephalous monster; (8) has left the district and is said to have had "another monster." Besides the 306 who did not pay anything a large number paid only a part of their fees. When "twelve good men and true" are so ready to censure a practitioner who demands his fee before turning out from his bed they should bear this in mind. Seeing the conditions under which many of these cases are attended—the rooms, the bed, the skirt, worn during labour, which has swept the streets for months—the practitioner can only be thankful that there is such a thing as the vis medicatrix naturæ.

## NURSING STAFF TROUBLES.

THERE are few positions in which correct, judicious, and considerate conduct is more difficult of attainment than it is in the case of the matron of a large hospital. The position of an autocrat is a difficult one, even when he is a man among men; when the autocrat is a woman among women great indeed are the merits of her who pleases both those whom and those for whom she rules. Governing bodies generally and wisely interfere but little in the direct control of the nurses by the matron. Very great, therefore, is the credit due to the ladies whose rule in these difficult positions seldom gives rise to complaint, to friction, or to insubordination. Many of our readers no doubt are aware that there has lately been some difficulty in connexion with the nursing staff at Charing Cross Hospital. If we may trust the account given in the general press the matron, as representing and as acting for the supreme authority in the institution, seems to have behaved with perfect openness and justice. In her opinion the retirement of certain sisters was advisable. The hospital authorities gave these ladies the opportunity of retiring in a convenient and graceful manner. Here, it seems to us, the matter should end.

## QUARANTINE WORK IN THE PHILIPPINE ISLANDS.

THE annual report for the period ended July 31st last, of Captain V. G. Heiser, United States Public Health and Marine Hospital Service, chief quarantine officer of the Philippine islands, has just been made public. From a perusal of the summary of a year's quarantine work in the Philippine Archipelago it is gathered that there are now on duty in the Philippines four commissioned officers at Manila and Mariveles, one each at Cebu, Iloilo, and Jolo, one pharmacist at Manila, and 70 attendants who act in the capacity of clerks, launch crews, quarantine employés, and so on. 207 vessels were fumigated with sulphur. 105 vessels infected with cholera were disinfected. Seven vessels with small-pox aboard and two with plague cases were disinfected. In addition there were 119 vessels disinfected because they came from infected ports. The report states that with the possible exception of Tor, Egypt, there is probably more disinfection accomplished at the Mariveles quarantine station than at any other plant in the world. Cholera was the disease with which the quarantine officers in the Philippines had chiefly to deal. 68 vessels with cholera on board arrived at the port of Manila and on 37 vessels cholera appeared during the time they were serving their outgoing quarantine. Captain Heiser is a strong advocate of strict quarantine regulations and says: "It is a matter for congratulation that the practice prescribed by the quarantine laws and regulations has been so thoroughly vindicated by practical experience. Of the 105 cholera-infected vessels that were disinfected at the Manila station only one developed the disease after being released from quarantine and then nine days after disinfection." With regard to the plague the report states that it is particularly creditable to the officers on duty in China and Japan that notwithstanding the fact that plague has been epidemic at Hong-Kong and Amoy during the year and present at other ports in those countries not a single case of this disease found in Manila could be traced to infection from without. The destruction of rats, other vermin, and cockroaches on board vessels at ports in the Philippine islands has been carried on with energy and much success during the period covered by the report. A few cases of leprosy were detected on vessels visiting Manila during the year. According to the report, the endeavour to prevent the occurrence of quarantinable diseases in the Philippine islands after those now present have been stamped out will require the strict observance of the quarantine laws and regulations at the ports of entry. As some of these ports are less than 48 hours by steamer from countries in which diseases like cholera are endemic the problem will be a difficult one and perhaps more than can be expected of the quarantine service alone, but it is hoped that with the assistance of an intelligent, energetic Board of Health it will not be impossible.

## THE AFTERMATH OF BAYLISS v. COLERIDGE.

WE deal in another column with the purely legal aspects of the libel case of Bayliss v. Coleridge which was recently decided in the law courts. We had hoped that with the finding of the jury the matter would have been allowed to drop. But events have happened and are happening which tend to prolong a useless controversy and which do not show the morality of an antivivisection society in a very favourable light. Mr. Coleridge was compelled by the verdict of the jury to pay a sum of £2000 damages and also to pay the costs. He thereupon, according to a statement made by his solicitor which appeared in the *Times* of Dec. 2nd, paid over from his private account a cheque for £2000, which cheque was duly sent to the plaintiff's solicitors on Nov. 19th. A paragraph afterwards appeared in the *Manchester Daily Dispatch* to the effect that the National Antivivisection Society had paid Mr. Coleridge's damages and costs. This was the statement which Mr. Coleridge's solicitor wrote to contradict. He added: "Mr. Coleridge also requests me to state that he has no intention of asking the society to contribute in any way to the payment of the damages or any of the legal expenses." As was to be expected, the London correspondent of the *Manchester Daily Dispatch* was not going to allow this traversing of his statement to pass unnoticed and accordingly in the *Times* of Dec. 7th appeared a letter from him inclosing for the information of the editor of the *Times* a circular sent out from the National Antivivisection Society under date Dec. 1st appealing for subscriptions to defray Mr. Coleridge's expenses and damages. The society also wrote on Dec. 2nd to the correspondent of the *Manchester Daily Dispatch* asking him to contradict a statement in which there was no word of truth and stating, moreover, that not only had the society not paid the costs and damages but that it had no intention of doing so. Mr. Coleridge may not have asked his society to pay his damages and costs but it is quite evident either that the society is

as a whole ignorant of what its presidents and vice-presidents, together with its chairman of committee, are about or that it is telling untruths. A circular is issued by the society dated Dec. 1st appealing for subscriptions to defray Mr. Coleridge's very heavy expenses, while on Dec. 2nd the same society writes a letter to say that it has neither paid the expenses nor is it going to do so. In one point the London correspondent of the *Manchester Daily Dispatch* is in error—namely, where he says that the society had paid the expenses. It has not yet, but by its own circular it is asking for money to do so. If this is not intention, what is it? Mr. Coleridge's solicitor, writing in the *Times* of Dec. 8th, argues that the National Antivivisection Society is not going to pay but that it is merely asking its subscribers to contribute money for such a purpose. The difference between a society and the members of a society seems to us so small as to be negligible and the argument employed—namely, that the members of the society are being asked to pay but that the society itself is not going to pay—is a piece of casuistry.

## ENTERIC FEVER SPREAD BY WATER-CRESS.

DURING the month of June there was noticed to be an unusual increase in the number of cases of enteric fever reported in the metropolitan borough of Hackney. Dr. J. King Warry, the medical officer of health of the borough, who has recently sent in his report of the outbreak to the public health committee of Hackney, was so struck by this incidence that he was led to suspect that some special agent was responsible. His report, which lies before us, reminds those to whom it is addressed that June is as a rule the month in which enteric fever is at its lowest point and the seasonal prevalence of the disease does not generally set in until August. But on June 6th two cases were reported; on June 13th six cases were reported; on June 20th 14 cases were reported; and on June 27th there were eight cases. Thenceforward the number of cases reported weekly remained at a number below eight until August 1st, when they rose to 11. In the following week there was a drop but during the three following weeks the numbers were 15, 16, and 16 respectively. There were thus two waves of disease, the first covering a period of eight weeks from the second week of June to the week ending July 25th and including 48 cases almost all located within an area represented by a circle of one-third of a mile in radius, the centre being situated in the Clarence-road. Wave No. 2 included 62 cases notified within nine weeks, mostly located within a circle of half a mile radius, the centre of which was situated near Orchard-street. Dr. Warry investigated all the usual sources of the infection of enteric fever, such as water, milk, ice-creams, and shell-fish, and could not satisfy himself that any one was in fault. He was struck, however, with the fact that of the cases forming wave No. 1 no less than 64·4 per cent. had partaken of water-cress during the three weeks prior to the origin of the illness. Of the second set of cases 55·3 per cent. had eaten water-cress during the same period. Dr. Warry therefore caused 17 samples of water-cress taken from places where the patients marketed to be examined and six of these samples came from the beds at West Ham. All the samples showed sewage organisms and a sample of water from the West Ham beds contained at least 50 bacilli coli communes in every cubic centimetre. It therefore appeared evident that the cause of the outbreak was the consumption of water-cress grown in beds fed with sewage. Dr. Warry suggests that as a result of his inquiry "(1) an extended inquiry should be made as to the conditions under which water-cress supplied to the metropolis is cultivated; (2) representations should be made by the borough council to the county borough of West Ham, pointing out the conditions under which water-cress is cultivated in that borough, and asking them to take such steps as may be needful to ensure in future that water-cress grown in that borough shall be free from pollution." Water-cress when clean is an excellent and wholesome vegetable food and every effort should be made by the health authorities of London to see that it is supplied free from sewage contamination.

## THE MEDICAL GRADUATES' COLLEGE AND POLYCLINIC.

MR. JAMES CANTLIE presided at the fifth annual dinner of the members and friends of the Medical Graduates' College and Polyclinic held on Dec. 3rd at the Trocadéro Restaurant, Piccadilly-circus, London, and in the course of proposing the toast of "The Polyclinic" said that the primary object of the institution was to better the equipment of the medical practitioner in battling with disease and in that way the Polyclinic deserved the support of the public in working for the health of the community. He reminded his hearers that medical men from all parts of the world had availed themselves of the benefits to be derived from the teaching at the college and they had attended in numbers beyond the anticipation of the most optimistic. The number of attendances of medical practitioners since 1900 had steadily increased and in 1903 they were well over 15,000. He did not pretend that post-graduate teaching had its commencement in the foundation of the Polyclinic but he asserted that never before in any institution in this or in any other country had such a plurality of distinguished teachers been collected together in one building. The teachers at the Polyclinic were drawn from Dingwall to Portsmouth, from Ireland and from Wales, from Canada, from Australia, from the United States, and from the length and the breadth of the continent of Europe. For those reasons he claimed that the institution was a true Polyclinic. He contended that it was impossible for any single medical school to carry on satisfactorily true post-graduate teaching, for the education at the medical schools was not final. Men learnt at those centres the means of commencing the medical profession but in the Polyclinic they had something which stood to the medical schools in the same relation as the universities stood to the public schools. It had to be remembered that in medicine progress proceeded apace and the truths of their youthful days were in many cases no longer above criticism. In commenting on the considerable opposition that had been offered to the Polyclinic Mr. Cantlie observed that it was not to be wondered at because no great idea had ever been introduced without exciting antagonism. Huxley had been preached at from the pulpit, obloquy had been thrown on Darwin, Ferrier had to appear in Bow-street police-court for investigating the functions of the human brain, and even Lister had been met by the opposition of some great surgeons in London who had tried to stem the advancing tide of surgical truths. Mr. Cantlie, continuing, said that the initial jealousy against which the Polyclinic had struggled had now passed away and the difficulties in its onward progress had vanished. The practice of the Polyclinic in drawing their teachers from so vast a field might well be followed with advantage in some medical schools. Men got so bound up in their own schools that they imagined nothing was going on beyond their walls. Mr. Cantlie said that Mr. Watson Cheyne had been telling him of a scheme for a true university by which a man might take out a ticket at the University of London and then go to any medical school he pleased. Loyalty to one's own medical school was to be applauded but loyalty to the medical profession was a higher duty which also demanded obedience. Those who came to

the Polyclinic were not under the necessity of going to other schools to hear other teachers because the best of all teachers from all sides came to the Polyclinic. The great need of the Polyclinic was a hospital and if necessary they must start a new one, but he thought it was well to remember that King's College Hospital was to be vacant very soon and he asked why it was not possible for the Polyclinic to take over King's College Hospital. He suggested the idea for the consideration of some millionaire. On concluding his speech Mr. Cantlie received a well-merited and prolonged round of applause. Every word of his remarks was clearly heard by all present and it will be recognised that this was no slight oratorical success when it is stated that covers were laid for over 160 guests.

## MILK ADULTERATION IN LONDON.

ANY organised movement that is calculated to reduce the extent to which the milk-supply of London is adulterated—chiefly in the form of watering—will be welcomed and the suggested action of the London County Council in this matter should have a good effect. The Public Health Committee has agreed to recommend the Council to pass the following motion:—

> That it is desirable that application should be made to Parliament for powers to enable the Council, as the authority dealing with the whole county, to secure at its own expense the analysis of samples of milk arriving at railway stations in London and subsequently distributed in the county; and that there would be further advantage if some system existed by which the Council, as the central authority, could insure that the Sale of Food and Drugs Acts should be administered on a sufficiently comprehensive scale in each sanitary district within the county.

This movement, if the Council agrees to the recommendation and eventually gains the powers which it asks it to seek, would, we are sure, do much to check the practice of watering milk. It seems to us, however, that the Local Government Board might find ground for objection to this proposal. Certain it is that however admirable the system of control may be as regards the milk delivered at the railway station or sold at the shops, there is no effective way of preventing the addition of water to the milk on its way to the consumer.

## THE OPEN-AIR TREATMENT OF THE TUBERCULOUS INSANE.

IN a leading article[1] and annotation[2] in THE LANCET in May last attention was drawn to the system of open-air treatment and especially to the "tent-life" of tuberculous insane patients as carried out in America. In the *Archives de Neurologie* for November Dr. E. Chardon, medical superintendent, and Dr. G. Raviart, assistant physician, of the asylum at Armentières, have published an account of a similar plan of treatment begun in May, 1902, at that asylum. The asylum consists of 15 pavilions separately built and standing well apart from one another on extensive grounds. Pavilion No. 4, a large one, standing at a distance from the others and on soil well suited for this treatment (dry gravel soil, elevated situation, and well sheltered from cold winds by trees), was selected and 47 tuberculous patients were placed therein. 26 presented marked signs of cavity in the lungs, 20 were in the stage of incipient cavity formation, and one was in the early stage of the disease. The warming and ventilation were found to be satisfactory and efficient and an equable temperature could be maintained indoors. The patients sat or walked out of doors many hours daily. A special dietary rich in fatty constituents was adopted. Small doses of cod-liver oil were given twice daily to each patient. Disinfectants in the form of a 2 per cent. solution of lysol were used in all utensils for sputa and the same chemical substance was employed in the process of washing or scrubbing floors and walls. An antiseptic spray charged with lysol was regularly and daily diffused into the atmosphere of the sitting rooms. The cubic capacity of the sleeping rooms was such as to allow each patient not less than from 28 to 30 cubic metres of air space. Under the above conditions of life the patients lived in the pavilion for 14 months. The records collected and the results obtained during that time, brief though it was, were gratifying. Dr. Chardon and Dr. Raviart state that amelioration of health and improvement in general physical condition were almost everywhere visible. The patients were weighed regularly every week or more often. Many of them began to gain weight steadily after a few weeks of residence. Those who were dull and demented in aspect and mood gradually became brighter and improved in their habits. The improvement was not only physical but moral, add Dr. Chardon and Dr. Raviart, for many at the end of their sojourn had learnt habits of hygiene and decency from improving mental capacity primarily brought about by the physical hygiene of the new life. Some patients improved so far that they could be discharged home to the care of their relatives. A full report is promised by Dr. Chardon and Dr. Raviart, but the brief record of the work published shows that the system has as much to commend it as the American method of tent life for the tuberculous insane.

[1] THE LANCET, May 2nd, 1903, p. 1249.
[2] THE LANCET, May 23rd, 1903, p. 1459.

## CATHETER DRAINAGE IN THE INTERSTITIAL NEPHRITIS AND PYELO-NEPHRITIS OF PROSTATIC DISEASE.

IN the *Boston Medical and Surgical Journal* of Nov. 19th Dr. A. T. Cabot has published important and original observations on the effect of catheter drainage in the interstitial nephritis and pyelo-nephritis of prostatic obstruction. The interstitial nephritis seems to be the result of the pressure of the urine on the kidneys when the outflow is obstructed and the pyelo-nephritis to be due to ascending infection from the bladder. A bladder habitually emptied by the catheter is liable to be infected sooner or later. Dr. Cabot assumes that a patient with enlarged prostate and dilated bladder has some degree of interstitial nephritis if the urine is abundant and of low specific gravity and that he has probably pyelo-nephritis if there are also high fever and pyuria. The latter supposition is strengthened if one or both kidneys are enlarged and tender. In such cases he has found that a great amelioration or disappearance of the symptoms takes place on draining the bladder by tying in a catheter; at the same time he gives large quantities of water so as to flush out the kidneys and urinary tract. In some cases when constant drainage was too soon charged for intermittent catheterism a return of the fever and inflammatory symptoms occurred; on the other hand, on persisting with the continuous drainage long enough it could be dispensed with in time. The good effects may be explained by gradual contraction of the dilated ureters restoring the valvular condition of their orifices and by recovery of tone of the distended bladder. The first effect of continuous drainage on the urine is a considerable increase in quantity. In one case the daily quantity rose from six to 16 pints. Then the amount gradually falls while the specific gravity rises. In some cases the quantity and specific gravity returned to normal. In others, while stopping short of this, the urinary excretion reached a point which was adequate. Dr. Cabot does not propose this method of treatment as a substitute for operations but as applicable to old and broken-down patients not fit for operation and as a means of preparing patients for operation. Patients with pyelo-nephritis and incipient uræmia may be so restored as to undergo without serious risk operations otherwise almost certainly fatal. In the introduction to catheter life of patients with

distended bladders—a process, however carefully done, liable to lead to cystitis and pyelo-nephritis with possibly a fatal result—Dr. Cabot has found that permanent drainage at the onset of the cystitis was most beneficial. He now prefers to establish at once constant drainage of a distended bladder rather than to attempt intermittent catheterisation. Thus the risk of pyelo-nephritis following is greatly diminished. The question arises, How long shall catheter drainage be continued? Dr. Cabot's rule is to continue it until all symptoms have disappeared and the urine has become almost normal. If on attempting to discontinue it fever returns and the quantity of urine diminishes he concludes that the ureteric orifices have not recovered their valvular condition and that irritation of the kidneys has again been produced by backward flow of infected urine from the bladder. Probably, also, increase of tension plays a part. In such a case drainage should be again established not only till symptoms disappear but for a much longer time. Then another attempt may be made and if the condition of the kidneys is prone to relapse the change should be made gradually.

## VICTORIA UNIVERSITY OF MANCHESTER: ADVANCED LECTURES ON PUBLIC HEALTH.

A SERIES of advanced lectures intended for medical officers of health will be delivered during the months of January, February, March, May, and June at the Victoria University of Manchester. These lectures, primarily intended for medical officers of health and medical men who are members of sanitary committees or who are candidates for diplomas in public health, are also open with certain formalities to others interested in sanitary matters. The syllabus for the coming session includes the following well-known sanitarians and public health authorities and we have placed the subjects on which they are announced to lecture next their names:—Professor Thomas Oliver, Industrial Diseases due to Poisonous Gases; Professor J. Lane Notter, Spread of Typhoid Fever, Dysentery, &c., with special reference to Military Tropical Life; Dr. James Niven, Feeding in Relation to the Health of the Young; Dr. S. Monckton Copeman, Vaccination, its Pathology and Practice; Dr. Arthur Newsholme, the Rôle of Unsuspected Cases in the Spread of Infectious Diseases; Mr. Gilbert Fowler, D.Sc., Chemistry of the Bacterial Treatment of Sewage; Dr. J. C. Thresh, Water Filtration; Dr. H. T. Bulstrode, Relations of Shell-fish to Disease; Dr. T. E. Hayward, the Construction of Life Tables, with Special Reference to Phthisis; Dr. John Robertson, Atmospheric Carbonic Acid, its Origin and Variation; and Mr. Francis Vacher, Defective Sanitary Appliances. Those who wish to attend this course of lectures should send their names with qualifications and address to Professor S. Delépine, Director of the Public Health Laboratory of the Victoria University of Manchester, 1, Stanley-grove, Manchester, who will supply any additional information.

## INTRACTABLE CONSTIPATION.

A NEW method of dealing effectually with cases of intractable constipation has been devised and successfully carried out by Mr. W. Arbuthnot Lane. We have already published[1] the views held by Mr. Lane concerning the condition of intestinal obstruction that results from the development of adhesions round the large gut in persons suffering from chronic constipation. Mr. Lane has operated on some cases for obstruction alone with the result that though the adhesions were freely divided at the time of operation the trouble recurred. Mr. Lane therefore thought of the plan of effecting a lateral anastomosis between the end of the ileum and the first piece of the rectum. By this means a free passage is made between the small gut and the rectum and the sluggish course of the fæces through the large gut is avoided. In a case lately operated on by Mr. Lane the conditions calling for the operation were well exemplified. The patient was anxious for the first operation because of the pain and tenderness which the obstruction produced. The adhesions were divided on four occasions, but in spite of frequent and immediate purgation the adhesions re-formed and the symptoms recurred. The several operations were undertaken at the patient's urgent request. All these four operations were of the same nature and the method detailed of connecting the ileum with the rectum was then proposed and carried out with the satisfactory result that the patient was relieved from pain and freed from the intolerable suffering that accompanied the condition for which she originally sought relief by operation. By connecting the ileum to the rectum the whole of the large intestine above this portion of the bowel was no longer in use. The patient was completely relieved of pain and tenderness, she lost the toxic symptoms and physical depreciation due to the long continuance of the fæces in the large bowel, and her intestines reacted readily to mild purgatives.

[1] THE LANCET, Jan. 17th, 1903, p. 153.

## CULTIVATION OF A TRYPANOSOMA.

THE extreme difficulty or impossibility of artificially cultivating the protozoa in a pure state—i.e., free from bacterial or other contamination—has been a great hindrance to the study of the parasitic forms. The announcement, therefore, that Mr. W. J. McNeal and Dr. F. G. Novy have succeeded in cultivating the trypanosoma of the rat (trypanosoma Lewisi) is of considerable interest.[1] The medium employed was composed of agar to which was added defibrinated blood, usually of the rabbit, obtained with aseptic precautions. The hæmoglobin seems to be an important constituent. Ordinary nutrient agar is prepared, filled into tubes, and sterilised. After the last steaming the tubes are allowed to cool to 50° C. and about one-third of the volume of the defibrinated blood is added. The tubes are then placed in the sloping position and the medium is allowed to solidify. The condensation water in the tubes is inoculated with loopfuls of blood obtained from an infected rat and the tubes are incubated either at room temperature or at blood heat; at the former development is slow and at the latter fairly rapid. 11 passages from tube to tube were made in the course of a year, incubating at room temperature, and some of the fluid from the tenth generation proved to be still virulent for rats. Incubating at blood heat 22 passages were made in six months and the twentieth generation also proved virulent. Modifying the culture medium by the addition of glycocoll and sodium asparaginate the trypanosoma was kept alive in one tube for no less than 306 days. More recently the same investigators have succeeded in cultivating the trypanosoma of nagana (trypanosoma Brucei) in a similar manner, though it proved much more difficult to carry out.

THE medical officer of health of Cape Colony states that for the week ending Nov. 14th only one case of plague occurred throughout the Colony, being that of a native child at East London. Plague infected rodents were discovered during the week at Cape Town, Lady Grey Bridge, Knysna, and Port Elizabeth. As regards the Mauritius a telegram from the Acting Governor received at the Colonial Office on Dec. 4th states that for the week ending

[1] "Contributions to Medical Research by Colleagues and Former Students." Dedicated to V. C. Vaughan. Ref. in the Bulletin de l'Institut Pasteur, vol. i., No. 16, 1903, p. 602.

Dec. 3rd there were 60 cases of plague and 41 deaths from the disease.

THE annual lecture under the endowment of the Richard Middlemore Post-Graduate Lectures will be delivered at the Birmingham and Midland Eye Hospital by Mr J. Jameson Evans, surgeon to the hospital, on Friday, Dec. 18th, at 4.30 P.M. The subject chosen by the lecturer is Bacterial Diseases of the Conjunctiva and there will be a clinical and microscopical demonstration after the lecture. All members of the medical profession are invited to attend.

A PAPER is to be read to-night (Friday) at the meeting of the Epidemiological Society at 11, Chandos-street, London, W.C., by Dr. Louis Sambon on Sleeping Sickness. The paper of Dr. Sambon, who is a lecturer at the London School of Tropical Medicine, may lead to an interesting debate if, as expected, Professor Ray Lankester, Sir Patrick Manson, Lieutenant-Colonel David Bruce, R.A.M.C., and Dr. Adolph Castellani are present.

THERE will be no measure introduced in Parliament next session to provide for revaccination. The Government appear to have found out at the last meeting of the Cabinet that their hands were too full to permit of the introduction of the Bill. Whether it will strengthen an administration whose best friends cannot describe as robust thus to shelve a necessary and promised piece of legislation is, to say the least, doubtful.

THE announcement is made that His Majesty the King has accepted an offer from Mr. John Brickwood to build a church for the Royal Sanatorium at Midhurst. The cost is estimated at £20,000. This may appear a late addition to the original scheme, but a place of worship was specifically omitted from the plans which obtained the first prize in the competition for reasons which Dr. A. Latham, the winner, gave.

## THE FINAL REPORT OF THE ROYAL COMMISSION ON ARSENICAL POISONING.

### I.

THIS report has now been issued as a Parliamentary paper.[1] It is a document of 50 pages and is signed by all six Royal Commissioners, Lord Kelvin (chairman), Sir William Hart Dyke, M.P., Sir William S. Church, K.C.B., Dr. T. E. Thorpe, F.R.S., Mr. H. Cosmo Bonsor, and Dr. A. Whitelegge, C.B. Dr. G. S. Buchanan, of the Local Government Board, acted as secretary to the Commission. It is stated that two volumes will shortly be issued, comprising the evidence received by the Commission and also various supplementary papers and reports of scientific inquiries which have been undertaken. In the present article, and in another which will appear in a subsequent issue, we propose to give an account of some of the principal points dealt with in the report.

The main circumstances which led to the appointment of the Commission in February, 1901, are sufficiently familiar. At the end of November, 1900, it became known that for several months large and continually increasing numbers of patients suffering from peripheral neuritis had been admitted to Manchester hospitals and Poor-law infirmaries and that Dr. E. S. Reynolds of Manchester had established that the cause of this occurrence and also of the prevalence of some other forms of illness was the presence of arsenic in beer—a fact which was confirmed by independent inquiries made by Mr. C. H. Tattersall, medical officer of health of Salford, and by several other investigators. Almost at once it was realised that this epidemic of arsenical poisoning was spread over many parts of Lancashire, Staffordshire, and elsewhere in the north and midlands and it was shown that in all cases the origin of the considerable quantities of arsenic found in the beer was "brewing sugar," sold by the Garston firm of Bostock and Co., which had been prepared by the use of an arsenical sulphuric acid manufactured by the firm of Nicholson and Sons of Leeds. Valuable reports on inquiries made in consequence of the epidemic were issued by medical men and chemists, particularly Dr. J. Niven, Dr. E. W. Hope, Mr. Tattersall, Dr. G. Reid, and Mr. E. Sergeant, by a strong "expert committee" appointed by the Manchester brewers, and by Dr. Buchanan on the result of inquiries made on behalf of the Local Government Board. These inquiries brought into prominence a state of affairs which on all hands was recognised as unsatisfactory: uncertainty, for example, regarding the extent of the epidemic, the share which malt and other ingredients of beer might have had in producing the recent poisoning by arsenic, the tests for arsenic most suitable for use by public analysts and brewers' chemists, and the risks of arsenical contamination in the case of other articles of food or drink. Moreover, they showed the necessity of thorough investigation of a number of important questions which had arisen in consequence of the demonstration afforded by the epidemic of the defects in the present laws relating to food and in existing administration under the Sale of Food and Drugs Acts. The Royal Commission which was consequently appointed at the instance of the President of the Local Government Board was given a wide reference covering these and other matters. The Commission issued an interim report in July, 1901, on which we commented at the time, setting out the results of its inquiries up to that date and the directions in which it was proposed to undertake further work, while making an interim recommendation for the exercise of control by the Board of Inland Revenue over arsenic in beer ingredients. It is evident that the investigation which has followed during the past two years has been thorough and comprehensive. The final report is divided into the following parts:—

1. Further observations regarding the epidemic of arsenical poisoning in 1900 and as to the medical and public health aspects of the evidence received regarding arsenic in beer and food.
2. The suggested relation between the disease "beri-beri" and arsenical poisoning.
3. Tests for arsenic in foods and substances used in the preparation or manufacture of food.
4. Ways in which foods are liable to become contaminated by arsenic.
5. Precautions which should be taken by manufacturers to exclude arsenic from foods.
6. Present means of official control over purity of food in relation to arsenic.
7. Recommendations as to improvements in official control over the purity of food.
8. Recommendations as to the proportions of arsenic in food which should now be held to constitute an offence under the Sale of Food and Drugs Acts.

The report has evidently been very carefully arranged and worded and its argument is so much condensed that it is by no means easy to abstract. In the present article we summarise some of the principal matters dealt with in Parts 1 to 3.

After briefly recalling the circumstances of the Bostock-Nicholson occurrence and the steps taken by public health authorities and by brewers to put an end to the outbreak of poisoning in 1900 the Commission reports the action which it took to secure that some 700 tons of arsenical glucose and "invert sugar" remaining at the works of Bostock and Co. after the company had gone into liquidation were disposed of for textile and other purposes unconnected with food. The danger of poisoning which arose through the use of arsenical sulphuric acid by this firm was not restricted to brewing sugars. In 1900 Messrs. Bostock and Co. had begun to manufacture preparations resembling treacle termed "table syrups"—sugar which had been "inverted" by Nicholson's sulphuric acid, flavoured with various fruit essences, and put up in two-pound tins for sale. The contents of some of these tins, examined by Dr. G. McGowan, D.Sc., showed about one grain of arsenic per pound. Fortunately, at the date of the discovery of arsenic in the firm's brewing sugars scarcely any of these syrups were on the market, as a trial series of tins sent out to retailers had not proved a success commercially on account of an accident in manufacture which led to the syrups crystallising. 14 tons of these tins were ultimately burnt by order of the liquidators.

*Extent, Distribution, and Fatality of the Epidemic of 1900.*

Information on these points was obtained by the evidence of witnesses and by circular letter addressed to medical officers of health throughout the country. No cases were reported from the southern or eastern counties, from London,

[1] Cd. 1848, Eyre and Spottiswoode, price 5½d.

or from 37 English county boroughs; the districts affected were in nearly all cases in the north-west and midlands. Lancashire and Staffordshire suffered most severely. Medical officers of health, in giving estimates of the number of cases which occurred in their districts, were in many instances careful to point out that there must have been others which did not come to their notice, and the Commission concludes that the total of persons attacked "was certainly 6000 and probably the number was, in fact, very considerably greater." It was impossible to determine the fatal cases with any approach to accuracy. A total of 70 deaths occurred in which arsenical poisoning was entered on the death certificate as one of the causes of death or was found to be the cause of death as the result of a coroner's inquest, but the deaths so certified did "not represent the total number of cases in which death resulted from, or was accelerated by, poisoning due to arsenic in beer. Deaths occurring before the discovery of the cause of the outbreak were frequently certified as due to 'chronic alcoholism' and 'cirrhosis of the liver,' and in some cases were attributed to Addison's disease and locomotor ataxy. Other deaths were recorded as due to 'alcoholic,' 'peripheral,' or 'multiple' neuritis." Owing to the fact that the Registrar-General's classification does not separately distinguish deaths from these diseases, no estimate of the fatal cases due to arsenic in the districts affected can be made by comparing the deaths in 1900 with those of previous years.

### *Effect of the Epidemic on the Birth-rate*

Reference is made to statistics furnished by Dr. Niven, medical officer of health of Manchester, which suggest that a strongly marked fall in the birth-rate of Manchester, Salford, and Liverpool in the third quarter of 1901 was attributable to the epidemic. These statistics, which include comparison with other large towns unaffected by the epidemic, will be studied with interest when the volumes of evidence of the Commission appear. The fact, if established, would accord with observations made by Brouardel and others on anaphrodisia and impotence resulting from long-continued doses of arsenic.

### *Symptoms of Poisoning due to Arsenic in Beer during the Epidemic of 1900.*

The report points out that—

> There were great differences in individual cases as regards the quantity of arsenic in the beer consumed, the amount of beer taken, and the duration of the period over which arsenical beer was drunk; and there were also further differences between individual beer-drinkers—e.g., as to age, sex, health, conditions of nutrition, and habits as regards alcohol—which determined the extent of their susceptibility to arsenical poisoning at the time when they began to take beer containing arsenic. ..... Corresponding to these and other differences, the disease produced by the arsenical beer during the epidemic varied greatly in its manifestations. On the one hand, there occurred throughout the epidemic (and particularly, it would seem, towards its termination, when people had been drinking arsenical beer for many weeks or months and so had taken considerable quantities of the poison) an abundance of cases in which, once the possibility of arsenic was entertained, there was comparatively little difficulty in deciding on clinical grounds that the illness was consistent with arsenical poisoning. Such cases presented symptoms corresponding to those described as characteristic of subacute poisoning by arsenic, or which are met with in the poisoning which occasionally results from long-continued doses of arsenic taken medicinally. They showed, for example, inflammation of various mucous surfaces—leading to coryza, huskiness, lacrymation, and the like; gastro-intestinal disturbance and diarrhœa; peripheral neuritis affecting sensory and motor nerves, and in some cases associated with herpes or with well-marked erythromelalgia, keratosis, or recent pigmentation corresponding to that which not infrequently occurs in persons taking arsenic for long periods.
>
> On the other hand, symptoms of the above kind were often slight or absent altogether, and one of the most instructive points in connexion with the outbreak is the occurrence of cases in which the symptoms, if taken by themselves and apart from the epidemic, would not have appeared to be readily or sufficiently explained by the suggestion that arsenic was the cause of illness. Thus in several comparatively mild cases the sufferers complained merely of burning hands and feet or they showed a variety of skin eruptions which are observed in many conditions which have nothing to do with arsenical poisoning. In other cases, again, the main symptoms were those resulting from dilated heart; and special difficulty arose in cases showing evidence of well-marked peripheral neuritis not associated with symptoms pointing clearly to arsenic and which appeared practically identical with "alcoholic neuritis," a disease previously considered to be the result, alike in drinkers of beer and spirits, of the toxic action of alcohol on nerve tissue.

The latter considerations are of considerable importance in relation to the argument, subsequently developed in the report, that even minute quantities of arsenic should be excluded from food. In an epidemic such as that in Manchester, when once the fact of arsenic in beer was known a great deal of anomalous illness was explained. But in every-day practice, without an epidemic or other circumstances to suggest arsenic, the true nature of such cases (and especially of the slighter forms of poisoning) would very seldom be capable of being satisfactorily established.

### *Poisoning from Arsenic in Beer apart from the Epidemic of 1900.*

The report gives a good deal of space to the question of arsenic in its relation to "alcoholic neuritis." The Commission is satisfied that before 1900 medical men in Manchester and other places were much more familiar with "alcoholic neuritis" than was the case in London, Scotland, and large centres of population in the south of England, and this view is confirmed by the comparative data obtained from hospitals. It is observed that in the former places the disease had been recognised (for some years before 1900 and the "Bostock-Nicholson" incident) as one which affected beer-drinkers far more than spirit-drinkers. Malt has now been shown to be liable to contain material quantities of arsenic, especially when dried by exposure to the products of combustion of gas coke. Manchester and Liverpool brewers who gave up the use of Bostock's and other brewing sugars found, nevertheless, that they could not produce beer which could be regarded as practically free from arsenic until they had discontinued the use of malt which had been dried over this fuel. Use of gas coke on the fire of the malt kiln has never been common in the southern and eastern counties, but at Manchester and Liverpool until the 1900 epidemic a large part of the malt used came from Yorkshire and had been dried over local gas coke. Some of these malts after the epidemic were found to contain one-twentieth of a grain and exceptionally even one-sixth of a grain of arsenic per pound, the quantity of malt used to the gallon of beer being usually between one and two pounds. From these considerations the Commission concludes that—

> The fact of greater prevalence of alcoholic neuritis among beer-drinkers in Manchester and Liverpool before 1900, when compared, for example, with London and places in the southern counties, is consistent with the explanation that (whatever may have been the case with regard to brewing sugars) the degree to which beer was likely to become contaminated by arsenic was greater in these two cities owing to the larger proportion of arsenic contained in much of the malt there used.

The report shows that this is confirmed by the evidence which the Commission has received of the marked diminution in "alcoholic neuritis" and in the condition locally known as "alcoholic heart" in Manchester during 1901 and 1902, when compared with other periods before the epidemic year of 1900. This diminution corresponds with stringent and effectual precautions against arsenic which have been taken by Manchester brewers since the epidemic, including the disuse of arsenical malt.

### *Arsenical Poisoning in Halifax in 1902.*

A small but instructive outbreak in Halifax, which was investigated for the Commission by Mr. H. Hammond Smith, and also by Dr. J. T. Neech, medical officer of health of the borough, gives point to these conclusions. Some 15 cases (three of which were fatal) presenting symptoms pointing unmistakeably to arsenical poisoning were discovered in this town early in 1902, the circumstances being first brought to notice by Dr. J. F. Hodgson:—

> All the persons attacked were beer-drinkers and in most instances heavy beer-drinkers. There was no reason to suspect that they had received arsenic otherwise than through beer, while there was strong evidence that the beer they had consumed had been arsenical. Samples of beer taken in January, 1902, from public houses frequented by certain of these cases were found to contain between one-fortieth and one-sixteenth of a grain of arsenious oxide per gallon. Inquiry was made as to the origin of the various beers which had come under suspicion. They were traced back to particular breweries and the source of the materials used in the brews which were specially implicated was ascertained. In some of these brews glucose or "invert" sugar had been used, but these had been supplied by different manufacturers, and the evidence gave no indication that the beers in question had obtained their arsenic by way of brewing sugars. None of the breweries concerned had been customers of Bostock and Co. in 1900. In two beers containing respectively one-sixteenth of a grain and one-thirtieth of a grain of arsenic per gallon no brewing sugar had been used. On the other hand, the facts pointed strongly to the conclusion that the implicated beers had been contaminated by arsenic derived from malt used in their preparation. In nearly every instance there was evidence that the malt concerned had been dried over local gas coke and that the brewer, before using it, had taken no precautions to ascertain its condition as regards arsenic. In most cases the malt which had been used in the implicated brews had been dried in the previous malting season, 1900-01, over gas coke; and at some maltings in the Halifax neighbourhood gas coke was still used in 1902. One large brewery, making its own malt, was using as much as 85 per cent. of gas coke for malt drying; at another it was found that gas coke was used when a sufficient supply of anthracite was not available. Certain samples of malt which appeared to correspond to those which had

been used in the beers under inquiry showed amounts of arsenic such as one-sixtieth of a grain per pound. In one instance where the brewer had used malt in the proportion of two pounds to the gallon of beer, a sample of the beer, taken in January, 1902, was found to contain one-sixteenth of a grain of arsenic to the gallon, and it was shown that on the single occasion on which the maltster had sent a sample of his malt to be examined for arsenic the analyst had reported the presence of as much as one-thirtieth of a grain of arsenic to the pound.

The Commission points to the circumstances of this small outbreak as showing that poisoning by arsenic in beer may even now easily pass undetected, notwithstanding that a number of cases may be occurring in the same place at about the same time, and adds that the Halifax beers associated with the outbreak "must have been typical in respect of arsenic of a large class of beers prepared before the 1900 epidemic from arsenical malt."

*Alcoholic Neuritis apart from Arsenical Poisoning.*

On this subject the Commission states:—

In our view it is important that the question of arsenic should be fully considered in all cases of peripheral neuritis attributed to beer-drinking. To what extent beer free from arsenic is capable of producing neuritis among heavy drinkers the data at our disposal do not suffice to permit an opinion to be given. We are unable to accept the thesis of some witnesses that there is, practically speaking, no "alcoholic neuritis" apart from arsenic. Inquiries which we have made as to the experience of London and provincial hospitals show that cases of alcoholic neuritis are met with from time to time in which the alcoholic liquor consumed has been exclusively spirits. All the evidence adduced is to the effect that spirits are not liable to contain arsenic.

As regards arsenical beer, "it may be conjectured that when small doses of arsenic are taken for a long time, together with considerable quantities of alcohol, the arsenical poisoning liable to result will be manifested more frequently and more conspicuously by peripheral neuritis than if the arsenic had been taken without the alcohol." Although it is possible that arsenic may enter into some combination with the organic matter of beer the chemical evidence is inconclusive and the Commission sees no reason to assume from merely clinical data that poisoning by arsenious oxide in beer is itself insufficient to explain the morbid conditions observed. Professor Delépine and others have shown that there is no evidence that cacodyl or substances akin to cacodyl are formed in arsenical beer.

The rest of Part I. deals with the evidence as to individual susceptibility to arsenic, accumulation of arsenic in human tissue, and ways in which arsenic is eliminated. It is obvious that the Commission has received a large amount of valuable information on these points and its evidence when published should provide a store of useful material for reference. An investigation into the elimination of arsenic by the hair, which the Commission undertook with the assistance of the medical registrars of certain London hospitals and the medical superintendents of certain London infirmaries, is summarised in the final report, and the complete account of this inquiry, which appears to have shown that the hair may give clear indications of arsenic when as little as one twentieth or one-thirtieth of a grain has been taken daily for two months, will be awaited with interest.

*Importance of the Exclusion of Small Quantities of Arsenic from Food.*

Under this heading the report deals with the general trend of the evidence on the subject; as to individual susceptibility, the possibility of arsenic being received at the same time from more than one source of food or drink, the difficulty of ascertaining the true nature of milder forms of arsenical poisoning occurring in isolated instances, and the toxic effect of small doses of arsenic administered over long periods to rodents.

The question has often arisen, with reference to particular foods liable to contain a relatively minute quantity of arsenic, whether such a quantity may not be regarded as unimportant and altogether negligible and the Commission have, as it were, been challenged to say that it can do no harm.

But reasons are given for not accepting this position.

We adhere to the view expressed in our first report that it would be unwise to express an opinion that any quantity of arsenic, however small, is to be regarded as admissible in any articles of food, and we think it should be the aim of the food manufacturer to exclude arsenic altogether from his products.

*Relation between Beri-beri and Arsenical Poisoning.*

This question has been investigated by Dr. Herbert Williams, Mr. C. C. Ballmore, and other port medical officers of health, who have ascertained particulars regarding cases of beri-beri on vessels arriving at London, Falmouth and elsewhere, and have collected specimens for analysis by Dr. McGowan on behalf of the Commission. In promising a detailed account of the information thus obtained the report states:—

In a few instances the results gave some ground for inference that the beri-beri cases inquired into had lately been taking arsenic along with their food. Thus the hair of one or two of the patients contained noteworthy amounts of arsenic, while small quantities of arsenic were found in several samples of dried fish—an important article in the diet of sailors on Scandinavian sailing ships. But when such clinical, etiological, and chemical data as we have been able to collect are considered as a whole, they cannot be said to support the view that cases of beri-beri met with on ships arriving at home ports are essentially attributable to poisoning by arsenic.

*Tests for Arsenic in Food and Substances used in the Preparation and Manufacture of Food.*

All who have followed the "arsenic question" during the past two years will be aware of the great difficulties which arose, particularly at first, in obtaining satisfactory methods of estimating minute quantities of arsenic in organic substances. The Commission has received a great deal of chemical evidence, especially from two strong committees, one a joint committee of the Societies of Public Analysts and Chemical Industry, with Mr. Otto Hehner as chairman, and the other, with Dr. Thorpe as chairman, appointed by the Board of Inland Revenue to advise as to arsenic in beer ingredients. The report deals with the essential principles of applying what is now termed the "Marsh-Berzelius test" to various substances. In this test, as is well known, the arsenic from the arseniuretted hydrogen is deposited, not on a porcelain tile, as in the "Marsh" test, but in a capillary tube. Within a certain range "mirrors" of arsenic deposited in these tubes show definite differences in intensity according to the quantity of arsenic present and an estimation is made by comparing the intensity of the mirror obtained from a given weight of substance with a set of standard mirrors. Attention to various points of detail is essential to accuracy. In nearly all cases it is necessary in the first instance to destroy completely any organic matter present. The presence of iron salts in the Marsh apparatus may seriously vitiate the result. It is not only necessary to have zinc which is free from arsenic but also zinc which is "sensitive" and does not retain the arsenic in the solution tested. The Commission finds that chemists are now agreed as to these and other sources of error which it is necessary to avoid and that if due regard is had to these points differences as small as 0·2 part of arsenic per 1,000,000 in the substance taken, or 0·0014 grain of arsenic per pound, can be readily distinguished. When various substances are taken for analysis in quantities which have been found practically convenient the presence of arsenic will be detected when in amounts well below one-thousandth of a grain per pound, or in the case of a liquid well below one three-hundredth of a grain per gallon. The departmental committee has found that in the case of beer ingredients many of the difficulties attending the Marsh-Berzelius test are obviated by an electrolytic method of evolving arseniuretted hydrogen, which can be applied wherever a current of sufficient intensity is available. Wide experience of the working of this method may soon be looked for.

## THE LONDON SCHOOL OF TROPICAL MEDICINE; ITS ACHIEVEMENTS AND REQUIREMENTS.

Sir Patrick Manson, M.D., F.R.S., gave an excellent address on Monday last, Dec. 7th, at the London School of Tropical Medicine, Seamen's Hospital, Royal Albert Dock, E., on the Achievements and Requirements of the School. A distinguished company was present to hear the address and to wish Sir Francis Lovell, the dean of the school, godspeed in his self-imposed task of paying another visit to the East to collect funds to carry on the work.

At the commencement of his address Sir PATRICK MANSON said that he wished to make public acknowledgment of the obligations of the London School of Tropical Medicine to Mr. Chamberlain, the late Colonial Secretary, who had been the mainspring of the movement for education in tropical medicine, and to the Seamen's Hospital Society and its governing body who supported Mr. Chamberlain's scheme. In a hundred ways it had been helping forward the good work. As regards the educational work of the school

Sir Patrick Manson said that since the school opened on Oct. 3rd, 1899, over three hundred students had passed through its portals. During the first two years (six sessions) they had had 149 students; during the last two years (six sessions) they had had 178 students. In the earlier days of the school's existence many of the students came for one or two months only. Now a large proportion of the students remained during the full course of three months. When they left the majority of the students had a genuine practical grasp of their subject. They had seen and most of them had applied for themselves the most recent methods of diagnosis, and as far as teaching and opportunity could insure they were qualified for medical work in the tropics—qualified both to practise their profession and to advance the science of tropical medicine. Where two or three men took a languid interest in tropical disease some five or six years ago, a whole army of eager investigators had arisen, mainly composed of men educated or inspired by the London and Liverpool schools of tropical medicine. This multiplication of investigators had already borne remarkable fruit. Without alluding to what had been done in Liverpool he could point out not a few notable triumphs by men from the London school, although the school had been in existence for only just over four years. He instanced Dr. G. C. Low's work in connexion with the etiology of elephantiasis; the practical experiment of Dr. L. Sambon and Dr. Low as to the spread of malaria by mosquitoes; the discovery in the Gambia colony by a pupil of the school of a new blood parasite which was subsequently recognised by Dr. J. E. Dutton of the Liverpool School of Tropical Medicine; and the demonstration by Dr. A. Castellani, another pupil of the school, of the association of this same parasite, a trypanosoma, with sleeping sickness. Sir Patrick Manson added here that the certainty of this trypanosoma being the cause of sleeping sickness had, through the clinical opportunities of their school and hospital, now been proved. There were other discoveries which might be accredited to the school, but those which he had mentioned were sufficient to indicate that their existence had not been unproductive and that the few thousand pounds which the establishment had cost the country had been well invested. The permanent additions to human knowledge made by the workers in the school would yield a huge compound interest, while he would like to acknowledge the liberality of Sir John Craggs, who had provided a scholarship of £300 a year, tenable for three years, for purposes of research. He had also made a very handsome annual donation to be awarded to any actual or past student of the school who, during any current year, should make an important contribution to tropical medicine. In referring to beri-beri Sir Patrick Manson said they did not despair of getting light on this disease. Dr. C. W. Daniels, their late superintendent, had been placed in charge of the research laboratory at Kuala Lumpur, and in the Federated Malay States beri-beri was rampant. Perhaps no country in the world, he thought, was so likely to benefit by recent advances in tropical medicine as the British colonies and protectorates in the Malay Peninsula, for beri-beri was a terrible drag on the mining and agricultural industries there. The school had expressed its gratitude to the Hon. Bomanji Dinshaw Petit who gave the school 100,000 rupees, but when he thought of the wealth that many Chinese had accumulated under the British flag in the Straits of Malacca he was not without hope that Sir Francis Lovell in his excursion to the East would find a Chinese rival to Mr. Petit.

After paying an eloquent tribute to the energy and unselfishness displayed by Sir Francis Lovell in his work for the school, Sir Patrick Manson concluded by an appeal for public support. At the present time, he said, the school had certain schemes of investigation before it for some of which they wanted money, for others men and money. They wished to furnish their museum and library on a scale adequate to the needs of the school. In short, they wanted £100,000, or as much of that sum as they could get. Any one of the discoveries which he had mentioned, said Sir Patrick Manson, was worth the sum he had named ten times over, apart from the education which the school had supplied to its students. They had given the public a great deal more than they had ever received, or would ever be likely to receive, and therefore they had no hesitation in asking for something more on account. The teachers were strictly honorary, their pay was so small that the laboratory microscopes were sometimes required to see it. They had the approval of those best qualified to judge of the work the school had undertaken—viz., the medical profession, whose hearty practical sympathy was peculiarly gratifying to them. Finally, Sir Patrick Manson said that "he who gives to the London School of Tropical Medicine lends to humanity."

On the motion of Sir WILLIAM S. CHURCH, seconded by Sir F. YOUNG, a vote of thanks was heartily passed to Sir Patrick Manson for his address.

## MEDICINE AND THE LAW.

*The Law relating to Experiments on Animals.*

THE recent libel action against the honorary secretary of the National Antivivisection Society was fought upon the issues raised upon the pleadings and so resolved itself into the question whether the dog experimented upon was under the influence of anæsthetics or was cruelly and recklessly operated upon without them. This was the substance of the libel, but the defendant's counsel in the course of the trial raised two questions as to the legality of the experiments performed which were not relevant because the libel contained no allegation with regard to them and which consequently were not decided either by judge or jury. These were (1) whether the demonstration performed by Mr. W. M. Bayliss before the students whom he was lecturing was permissible under the Act; and (2) whether the dog used for this demonstration should have been so used taking into consideration the fact that it had already had its abdomen opened for the purpose of examination by Dr. Starling. Both these questions are regulated by the same section of the Act (39 & 40 Vict. c. 77, Sec. 3). With regard to the first, which is the more important of the two to those engaged in the instruction of students, this section says: "The experiment shall not be performed as an illustration of lectures in medical schools, hospitals, colleges, or elsewhere," provided that "experiments may be performed under the foregoing provisions as to the use of anæsthetics by a person giving illustrations of lectures in medical schools, hospitals, or colleges or elsewhere, on such certificate being given as in this Act mentioned that the proposed experiments are absolutely necessary for the due instruction of the persons to whom such lectures are given with a view to their acquiring physiological knowledge which will be useful to them for saving or prolonging life or alleviating suffering." It will be seen that the important question here is the scope of the expression "absolutely necessary for the due instruction" of students in physiological knowledge such as will be useful to them in the medical profession, and that the application of the section to particular experiments must be, to some extent, a matter of opinion. At any trial arising out of an alleged infringement of this portion of the Act it would be a question of fact whether a particular experiment was necessary for due instruction. A jury would have to decide this if the case was being tried with a jury and the jury would have to base its decision upon evidence given on oath before it. The best obtainable witnesses as to this would be persons engaged in the instruction and examination of students, as it is submitted that their views would naturally and properly carry the greatest weight both as to the assistance given to instruction by actual demonstration and as to the need of accurate knowledge of the phenomena demonstrated by those desiring to "prolong life and alleviate suffering." The evidence of eminent men engaged in the practice of medicine and of surgery would be of almost equal importance and the court would no doubt listen to the opinion of any medical man who was called as a witness subject to such comment as might be made upon his qualification to speak with authority. The evidence given on behalf of Mr. Bayliss was precisely such as has been indicated above and had the issue in question been before the jury the evidence upon it could no doubt have been increased in quantity, although in quality it could hardly have been strengthened. The matter is one which no doubt throws considerable responsibility upon the teacher who has to exercise his discretion in the selection of his illustrations. He is, however, subject to the supervision imposed by the Act and this is in itself a protection to him. It is clear that the Act contemplates the use of live animals for purposes

of instruction, and as only ascertained truths are required to be inculcated by teachers it must also be held to have contemplated the employment of animals for the demonstration of ascertained truths. The fact that the result of the experiment made use of at University College might have been described orally with the aid of diagrams or models was urged repeatedly during the hearing of Bayliss *v.* Coleridge. It is conceded that all scientific facts can to some extent be imparted without actual demonstration; it is the question of the degree to which such demonstration is desirable and the circumstances in which it is necessary upon which physiologists and "antivivisectionists" will continue to differ. If the question is removed from the debateable ground of physiology to that of chemistry few will be found to say that demonstration is unnecessary for instruction simply because the consequence that will follow the experiment has been reduced by previous trials to a matter of certainty. It must also be remembered that the standard imposed by the words "due instruction" is not a fixed one. The "due instruction" of students varies not only from century to century but from generation to generation and from decade to decade, and the public who alone gain by the advances of science and by the improvement in teaching in our medical schools will not be anxious to impose restrictions for which no need is shown. With regard to the second question, as to the repeated use of the same dog, "the animal must, if the pain is likely to continue after the effect of the anæsthetic has ceased, or if any serious injury has been inflicted upon the animal, be killed before it recovers from the influence of the anæsthetic which has been administered," provided that "experiments may be performed without the person who performed such experiment being under an obligation to cause the animal on which any such experiment is performed to be killed before it recovers from the influence of the anæsthetic on such certificate being given as in this Act mentioned, that the so killing the animal would necessarily frustrate the object of the experiment, and provided that the animal be killed as soon as such object be attained." In the course of Bayliss *v.* Coleridge it was proved that Dr. Starling performed an experiment upon a dog which he was entitled under the Act to perform and afterwards kept it alive as he was entitled under the Act to do. He at a later date anæsthetised it and made an examination of the result of his previous experiment which again he had a perfect right to do. He then according to the "antivivisectionist" contention should have killed the dog, instead of which, while it was still in a state of anæsthesia he allowed Mr. Bayliss to use it for a demonstration entirely distinct from the experiments made already upon it. Dr. Starling pointed out that the animal was already completely unconscious and destined never to return to consciousness and that the alternative was to take a fresh dog for the purpose of Mr. Bayliss's lecture. This has been represented in various "antivivisectionist" articles in newspapers and elsewhere as a desire to economise dogs, or, rather, to save the price of them. Such nonsense carries its own refutation on the face of it. It may be contended that Dr. Starling and Mr. Bayliss committed a technical infringement of the Act under which they performed their experiments. If they did so neither they nor any other physiologists need repeat their offence now that attention has been called to the point, and in this respect the effect of Bayliss *v.* Coleridge will be that a few more animals will be used in the performance of experiments in the course of each year than would otherwise have been the case, a curious result for an "antivivisectionist" society to have brought about. The amount of pain inflicted upon animals will be neither diminished nor increased.

*Insanity in the Eye of the Law.*

In a trial for murder at the recent Derby assizes Mr. Justice Channell told the jury that the prisoner might be insane and still be responsible at law for what he had done. He called their attention to the answer given by the judges in M'Naughton's case, where it was said that "if the accused was conscious that his act was one which he ought not to do and if that act was at the same time contrary to the law of the land he was punishable," and where it was further pointed out that the usual course was "to leave to the jury the question whether the party accused had a sufficient degree of reason to know that he was doing an act that was wrong, with such observations and explanations as the circumstances of each particular case might require." Mr. Justice Channell added that his own practice was to lay down the law slightly more in favour of the prisoner by adding that if from disease of the mind a person was unable to consider what was the difference between right and wrong, then it might fairly be said that he did not "know" the difference between right and wrong. He added that mere insufficiency of motive was not to be relied upon as evidence that the prisoner did not know that he was doing wrong. In the case which his lordship was summing up a labourer, aged 25 years, had murdered a girl, a domestic servant at a farm where he was wagoner, by cutting her throat and had then attempted his own life in the same way. His own story as to motive was that she had "deceived" him and told him that she had "led him on for a bit of fun." There was evidence of several cases of insanity having occurred among the prisoner's relatives, descendants of his maternal great-aunts, and also that he had had an insane great-aunt, but no ancestor was proved to have been insane. The prisoner himself was stated to be deficient in intellect and the learned judge so described him to the jury but asked them to satisfy themselves before acquitting him that his mental condition was such when he did the act as to prevent him from judging whether he was doing wrong. The jury convicted the prisoner but recommended him to mercy, and sentence of death was passed. In these circumstances it will not be surprising if the clemency of the Crown is exercised, but at the same time it may confidently be said that if the sentence is carried out it will be after full and sufficient investigation. The degree of responsibility for criminal acts that should be exacted from those describable as mentally deficient must depend upon the consideration of each case and must also to a great extent be a matter of individual opinion. It is unfortunate that the conviction of prisoners so deficient should inevitably depend upon the varying views entertained by jurors, often after hearing conflicting evidence, and still more upon the varying degree of influence exercised by the judge who may either be willing to undertake an admittedly onerous responsibility or may shrink from doing so. This circumstance introduces an element of chance and uncertainty which is very undesirable.

## VITAL STATISTICS.

### HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 3107 births and 5364 deaths were registered during the week ending Dec. 5th. The annual rate of mortality in these towns, which had been 17·9, 17·4, and 17·6 per 1000 in the three preceding weeks, further rose last week to 18·6 per 1000. In London the death-rate was 17·8 per 1000, while it averaged 18·9 per 1000 in the 75 other large towns. The lowest death-rates in these towns were 7·4 in Kings Norton, 10·3 in Grimsby 10·6 in Hornsey, 10·8 in Waltham-tow, 11·1 in Reading, 11·4 in Tottenham, and 11·8 in East Ham and in Handsworth; the highest rates were 25·5 in Walsall, 27·5 in Warrington, 27·7 in Bury, 29·2 in Bootle, 29·9 in York, 30·2 in Middlesbrough, 30·5 in Hanley, and 34·4 in Wigan. The 53·4 deaths in these towns last week included 402 which were referred to the principal infectious diseases, against 432, 436, and 430 in the three preceding weeks; of these 402 deaths, 102 resulted from measles, 87 from whooping-cough, 72 from diarrhœa, 55 from diphtheria, 43 from scarlet fever, 40 from "fever" (principally enteric), and three from small-pox. No death from any of these diseases was registered last week in Hornsey, Hastings, Reading, Northampton, Handsworth, West Bromwich, Aston Manor, Halifax, or South Shields; the highest death-rates from the principal infectious diseases were recorded in Willesden, Warrington, Bury, Preston, Rotherham, York, Sunderland, and Merthyr Tydfil. The greatest proportional mortality from measles occurred in Willesden, Stockport, Warrington, Bury, Salford, Preston, Rotherham, York, and Sunderland; from scarlet fever in Merthyr Tydfil; from diphtheria in Great Yarmouth and St. Helens; from whooping-cough in Walsall, Bootle, York, and Merthyr Tydfil; and from diarrhœa in Stockport. The mortality from "fever" showed no marked excess in any of the large towns. Two fatal cases of small-pox were registered in Gateshead and one in Manchester, but not one in any other of the 76 large towns. The number of small-pox patients under treatment in the Metropolitan Asylums hospitals, which

had been 51, 47, and 40 at the end of the three preceding weeks, had further declined to 35 at the end of last week; three new cases were admitted during the week, against 16, five, and five at the end of the three preceding weeks. The number of scarlet fever cases in these hospitals and in the London Fever Hospital on Saturday last, Dec. 5th, was 1715, against 1824, 1832, and 1770 on the three preceding Saturdays; 161 new cases were admitted during the week, against 185, 191, and 157 in the three preceding weeks. The deaths in London referred to pneumonia and diseases of the respiratory organs, which had been 339, 325, and 399 in the three preceding weeks, declined again last week to 358 and were 68 below the number in the corresponding period of last year. The causes of 67, or 1·2 per cent., of the deaths in the 76 large towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Leicester, Nottingham, Leeds, Newcastle-on-Tyne, and in 44 other smaller towns; the largest proportions of uncertified deaths were registered in Norwich, Birmingham, Liverpool, St. Helens, Warrington, Manchester, Sheffield, South Shields, and Gateshead.

### HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 17·4, 17·4, and 18·7 per 1000 in the three preceding weeks, further rose to 20·0 per 1000 during the week ending Dec. 5th and was 1·4 per 1000 in excess of the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 12·4 in Perth and 13·2 in Paisley to 23·3 in Greenock and 24·0 in Dundee. The 655 deaths in these towns included 22 from measles, 12 from diarrhœa, seven from whooping-cough, five from "fever," four from diphtheria, two from small-pox, and one from scarlet fever. In all, 53 deaths resulted from these principal infectious diseases last week, against 49, 61, and 62 in the three preceding weeks. These 53 deaths were equal to an annual rate of 1·6 per 1000, which was 0·2 per 1000 above the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of measles, which had been 10, 13, and 17 in the three preceding weeks, further rose last week to 22, all of which occurred in Glasgow. The deaths from diarrhœa, which had been 20 and 22 in the two preceding weeks, declined again to 12 last week, and included five in Dundee, four in Glasgow, and two in Aberdeen. The fatal cases of whooping-cough, which had been four, seven, and nine in the three preceding weeks, declined again last week to seven, of which three were registered in Glasgow and two in Edinburgh. The deaths referred to different forms of "fever," which had been ten, six, and four in the three preceding weeks, rose again to five last week and included two in Glasgow and two in Dundee. The fatal cases of diphtheria which had been four, seven, and five in the three preceding weeks, declined again last week to four, of which two were recorded in Glasgow and two in Greenock. The deaths from small-pox, which had been one, four, and three in the three preceding weeks, declined last week to two, both of which occurred in Glasgow. The deaths referred to diseases of the respiratory organs in these towns, which had been 129, 136, and 148 in the three preceding weeks, declined again last week to 138, but were slightly in excess of the number in the corresponding period of last year. The causes of 24, or nearly 4 per cent., of the deaths in these eight towns last week were not certified.

### HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 20·9, 24·5, and 24·8 per 1000 in the three preceding weeks, further rose to 27·5 per 1000 during the week ending Dec. 5th. During the past four weeks the death-rate has averaged 24·4 per 1000, the rates during the same period being 17·1 in London and 16·6 in Edinburgh. The 200 deaths of persons belonging to Dublin registered during the week under notice were 20 in excess of the number in the preceding week and included 13 which were referred to the principal infectious diseases, against seven, nine, and 11 in the three preceding weeks; of these, five resulted from whooping-cough, four from "fever," two from scarlet fever, and two from diphtheria, but not any from small pox, measles, or diarrhœa. These 13 deaths were equal to an annual rate of 1·8 per 1000, the death-rates last week from the principal infectious diseases being 1·2 in London and 0·5 in Edinburgh. The fatal cases of whooping-cough, which had been three, two, and three in the three preceding weeks, further rose last week to five. The deaths referred to different forms of "fever," which had been three, one, and four in the three preceding weeks, were again four last week. The 200 deaths in Dublin last week included 44 of children under one year of age and 55 of persons aged 60 years and upwards; the deaths of infants showed a slight decline from the number in the preceding week, while those of elderly persons were considerably in excess. Six deaths from violence and three inquest cases were registered during the week and 74, or more than one-third, of the deaths occurred in public institutions. The causes of eight, or 4 per cent., of the deaths were not certified.

### VITAL STATISTICS OF LONDON DURING NOVEMBER, 1903.

IN the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases it appears that the number of persons reported to be suffering from one or other of the nine diseases specified in the table was equal to an annual rate of 6·0 per 1000 of the population, estimated at 4,613,812 persons in the middle of the year. In the three preceding months the rates had been 5·5, 6·5, and 6·8 per 1000 respectively. The rates were considerably below the average in Kensington, Chelsea, the City of Westminster, Hampstead, Stoke Newington, Finsbury, and Greenwich, while they showed the largest excess in St. Marylebone, Hackney, Shoreditch, Bethnal Green, Stepney, and Deptford. The prevalence of small-pox showed a slight diminution last month; of the 33 cases notified during the month eight belonged to the City of Westminster, seven to Wandsworth, four to St. Pancras, four to Islington, three to Southwark, and three to Camberwell. The Metropolitan Asylums hospitals contained 40 small-pox patients at the end of last month, against 57, 21, and 42 at the end of the three preceding months; the weekly admissions averaged eight, against nine, five, and ten in the three preceding months. Scarlet fever was considerably less prevalent during November than it had been in either of the two preceding months; the greatest proportional prevalence of this disease occurred in Paddington, Hackney, Bethnal Green, Stepney, Deptford, and Woolwich. The number of scarlet fever patients in the Metropolitan Asylums hospitals, which had been 1754, 1849, and 1794 at the end of the three preceding months had further declined to 1738 at the end of November; the weekly admissions averaged 184, against 211, 241, and 210 in the three preceding months. The prevalence of diphtheria showed a marked decline from that in the preceding month. Among the various metropolitan boroughs this disease was proportionally most prevalent in Fulham, St. Marylebone, Bethnal Green, Poplar, Wandsworth, and Deptford. There were 763 diphtheria patients remaining under treatment in the Metropolitan Asylums hospitals at the end of last month, against 716, 671, and 753 at the end of the three preceding months. The weekly admissions averaged 109, against 94, 114, and 121 in the three preceding months. The prevalence of enteric fever, which had risen continuously during the seven preceding months, showed a slight decline during November; the greatest proportional prevalence of this disease occurred in Hackney, Shoreditch, Stepney, Poplar, Southwark, Bermondsey, and Woolwich. The number of enteric fever patients in the Metropolitan Asylums hospitals, which had been 172, 247, and 285 at the end of the three preceding months, had increased to 286 at the end of last month; the weekly admissions averaged 45, against 27, 40, and 44 in the three preceding months. Erysipelas was proportionally most prevalent in Hackney, Holborn, Finsbury, Shoreditch, Bethnal Green, and Bermondsey. The 14 cases of puerperal fever notified last month included two in Wandsworth and two in Lewisham.

The mortality statistics in the table relate to the deaths of persons actually belonging to the various boroughs, the deaths occurring in public institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ending Nov. 28th, the deaths of 5735 persons belonging to London were registered, equal to an annual rate of 16·2 per 1000, against 13·5, 14·4, and 14·6 per 1000 in the three preceding

## ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING NOVEMBER, 1903.

*(Specially compiled for* THE LANCET.)

| CITIES AND BOROUGHS. | Estimated population in the middle of 1903. | NOTIFIED CASES OF INFECTIOUS DISEASE. | | | | | | | | | | | DEATHS FROM PRINCIPAL INFECTIOUS DISEASES. | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Small-pox. | Scarlet fever. | Diphtheria.* | Typhus fever. | Enteric fever. | Other continued fevers. | Puerperal fever. | Erysipelas. | Cholera. | Total. | Annual rate per 1000 persons living. | Small-pox. | Measles. | Scarlet fever. | Diphtheria.* | Whooping-cough. | Typhus fever. | Enteric fever. | Other continued fevers. | Diarrhœa. | Total. | Annual rate per 1000 persons living. | Deaths from all causes. | Death-rate per 1000 living. | Deaths of infants under one year to 1000 births. |
| **LONDON** ... ... ... ... ... ... ... | **4,613,812** | **33** | **863** | **536** | **—** | **305** | **4** | **14** | **339** | **—** | **2124** | **6·9** | **2** | **119** | **29** | **56** | **49** | **—** | **58** | **—** | **172** | **485** | **1·4** | **5735** | **16·2** | **156** |
| *West Districts.* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Paddington ... ... ... ... ... ... | 146,032 | — | 42 | 6 | — | 12 | — | — | 13 | — | 73 | 6·5 | — | 5 | 2 | 1 | 1 | — | — | — | 6 | 15 | 1·3 | 155 | 13·8 | 106 |
| Kensington ... ... ... ... ... ... | 178,409 | — | 23 | 9 | — | 11 | — | — | 13 | — | 56 | 4·1 | — | 7 | 3 | 1 | 2 | — | 2 | — | 6 | 21 | 1·5 | 221 | 16·2 | 175 |
| Hammersmith ... ... ... ... ... | 115,803 | 1 | 16 | 15 | — | 9 | — | 1 | 5 | — | 47 | 5·3 | — | — | 1 | 1 | 1 | — | 1 | — | 3 | 7 | 0·8 | 150 | 16·9 | 157 |
| Fulham ... ... ... ... ... ... ... | 147,780 | 1 | 19 | 25 | — | 10 | — | 1 | 2 | — | 58 | 5·1 | — | 18 | — | 1 | — | — | 4 | — | 8 | 31 | 2·7 | 175 | 15·4 | 114 |
| Chelsea ... ... ... ... ... ... ... | 74,169 | — | 9 | 7 | — | 2 | — | 1 | 3 | — | 22 | 3·9 | — | 3 | — | — | — | — | 2 | — | 2 | 7 | 1·2 | 79 | 13·9 | 171 |
| City of Westminster ... ... ... ... | 179,052 | 8 | 23 | 13 | — | 7 | — | — | 7 | — | 58 | 4·2 | 2 | 12 | 1 | 2 | 2 | — | 1 | — | 2 | 22 | 1·6 | 206 | 15·0 | 105 |
| *North Districts.* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| St. Marylebone ... ... ... ... ... | 131,234 | 1 | 25 | 27 | — | 7 | 2 | 1 | 12 | — | 75 | 7·5 | — | 5 | — | 3 | 1 | — | 3 | — | 4 | 16 | 1·6 | 144 | 14·3 | 73 |
| Hampstead ... ... ... ... ... ... | 85,197 | — | 10 | 9 | — | 1 | — | — | 2 | — | 22 | 3·4 | — | — | 1 | 1 | — | — | — | — | — | 2 | 0·3 | 81 | 12·4 | 120 |
| St. Pancras ... ... ... ... ... ... | 235,716 | 4 | 51 | 31 | — | 8 | — | — | 24 | — | 118 | 6·5 | — | — | 4 | 1 | 3 | — | 1 | — | 6 | 15 | 0·8 | 286 | 15·8 | 138 |
| Islington ... ... ... ... ... ... ... | 339,137 | 4 | 59 | 21 | — | 11 | — | 1 | 22 | — | 118 | 4·5 | — | 2 | 1 | 2 | 2 | — | 4 | — | 8 | 19 | 0·7 | 401 | 15·4 | 149 |
| Stoke Newington ... ... ... ... ... | 52,069 | — | 2 | — | — | 1 | — | — | 3 | — | 6 | 1·5 | — | — | — | — | 1 | — | 2 | — | — | 3 | 0·8 | 58 | 14·5 | 101 |
| Hackney ... ... ... ... ... ... ... | 224,082 | — | 54 | 26 | — | 23 | — | — | 24 | — | 127 | 7·4 | — | 3 | — | 2 | 3 | — | 3 | — | 4 | 15 | 0·9 | 230 | 13·4 | 143 |
| *Central Districts.* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Holborn ... ... ... ... ... ... ... | 57,845 | — | 10 | 1 | — | 5 | — | — | 11 | — | 27 | 6·1 | — | — | — | — | — | — | 2 | — | 1 | 3 | 0·7 | 87 | 19·6 | 178 |
| Finsbury ... ... ... ... ... ... ... | 99,717 | — | 11 | 2 | — | 4 | — | — | 15 | — | 32 | 4·2 | — | 6 | 1 | 1 | — | — | 1 | — | 7 | 16 | 2·1 | 171 | 22·4 | 172 |
| City of London ... ... ... ... ... | 24,539 | — | 4 | 1 | — | 2 | — | — | 1 | — | 8 | 4·3 | — | — | 1 | — | — | — | 1 | — | 1 | 3 | 1·6 | 35 | 18·6 | 179 |
| *East Districts.* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shoreditch ... ... ... ... ... ... | 117,513 | — | 28 | 11 | — | 14 | 1 | 1 | 15 | — | 70 | 7·8 | — | 7 | 2 | 1 | 2 | — | 3 | — | 6 | 21 | 2·3 | 197 | 21·9 | 222 |
| Bethnal Green ... ... ... ... ... | 130,028 | — | 44 | 23 | — | 9 | — | 1 | 21 | — | 98 | 9·8 | — | 1 | 2 | 1 | 3 | — | 2 | — | 9 | 18 | 1·8 | 201 | 20·1 | 250 |
| Stepney ... ... ... ... ... ... ... | 302,153 | — | 83 | 46 | — | 26 | — | — | 32 | — | 187 | 8·1 | — | 4 | 1 | 5 | 5 | — | 1 | — | 9 | 25 | 1·1 | 421 | 18·2 | 165 |
| Poplar ... ... ... ... ... ... ... | 169,550 | — | 35 | 30 | — | 14 | — | 1 | 8 | — | 88 | 6·8 | — | — | 2 | 10 | 2 | — | 4 | — | 9 | 27 | 2·1 | 249 | 19·1 | 173 |
| *South Districts.* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Southwark ... ... ... ... ... ... | 207,369 | 3 | 24 | 20 | — | 37 | — | — | 22 | — | 106 | 6·7 | — | 3 | 1 | 1 | 2 | — | 8 | — | 14 | 29 | 1·8 | 306 | 19·2 | 199 |
| Bermondsey ... ... ... ... ... ... | 129,801 | — | 22 | 9 | — | 12 | — | — | 25 | — | 68 | 6·8 | — | 1 | 1 | 1 | 1 | — | 3 | — | 3 | 10 | 1·0 | 207 | 20·8 | 187 |
| Lambeth ... ... ... ... ... ... ... | 307,711 | — | 39 | 38 | — | 21 | 1 | 1 | 17 | — | 117 | 5·0 | — | 15 | 2 | 3 | 5 | — | 3 | — | 12 | 40 | 1·7 | 369 | 15·6 | 137 |
| Battersea ... ... ... ... ... ... ... | 173,422 | — | 34 | 24 | — | 12 | — | — | 16 | — | 86 | 6·6 | — | 9 | — | 5 | 2 | — | 1 | — | 7 | 22 | 1·7 | 202 | 15·2 | 163 |
| Wandsworth ... ... ... ... ... ... | 249,678 | 7 | 43 | 49 | — | 14 | — | 2 | 18 | — | 133 | 6·9 | — | 15 | — | 5 | 3 | — | 1 | — | 13 | 37 | 1·9 | 290 | 15·1 | 138 |
| Camberwell ... ... ... ... ... ... | 265,562 | 3 | 41 | 25 | — | 12 | — | 1 | 15 | — | 97 | 4·8 | — | 3 | — | 1 | 2 | — | 3 | — | 15 | 24 | 1·2 | 311 | 15·3 | 170 |
| Deptford ... ... ... ... ... ... ... | 112,537 | — | 45 | 25 | — | 1 | — | — | 12 | — | 83 | 9·6 | — | — | 2 | 4 | 2 | — | — | — | 3 | 11 | 1·3 | 142 | 16·4 | 183 |
| Greenwich ... ... ... ... ... ... | 99,524 | — | 7 | 10 | — | 2 | — | — | 5 | — | 24 | 3·1 | — | — | 1 | 2 | 1 | — | — | — | 7 | 11 | 1·4 | 106 | 13·8 | 138 |
| Lewisham ... ... ... ... ... ... | 136,405 | 1 | 27 | 17 | — | 4 | — | — | 3 | — | 54 | 5·2 | — | — | — | 3 | — | — | 1 | — | 3 | 7 | 0·7 | 110 | 10·5 | 108 |
| Woolwich ... ... ... ... ... ... | 121,478 | — | 33 | 16 | — | 10 | — | — | 3 | — | 62 | 6·7 | — | — | — | — | 3 | — | 1 | — | 4 | 8 | 0·9 | 145 | 15·6 | 170 |
| Port of London ... ... ... ... ... | — | — | — | — | — | 4 | — | — | — | — | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

* Including membranous croup.

months. The lowest death-rates in London last month were 10·5 in Lewisham, 12·4 in Hampstead, 13·4 in Hackney, 13·8 in Paddington and in Greenwich, and 13·9 in Chelsea; the highest rates were 19·2 in Southwark, 19·6 in Holborn, 20·1 in Bethnal Green, 20·8 in Bermondsey, 21·9 Shoreditch, and 22·4 in Finsbury. The 5735 deaths from all causes included 485 which were referred to the principal infectious diseases; of these, two resulted from small-pox, 119 from measles, 29 from scarlet fever, 56 from diphtheria, 49 from whooping-cough, 58 from enteric fever, and 172 from diarrhœa. The lowest death-rates last month from these infectious diseases were recorded in Hammersmith, Hampstead, St. Pancras, Islington, Stoke Newington, Holborn, and Lewisham; and the highest rates in Fulham, Finsbury, Shoreditch, Bethnal Green, Poplar, Southwark, and Wandsworth. The two fatal cases of small-pox belonged to the City of Westminster. The 119 deaths from measles were 50 below the corrected average number in the corresponding periods of the ten preceding years; this disease was proportionally most fatal in Fulham, the City of Westminster, Finsbury, Shoreditch, Lambeth, Battersea, and Wandsworth. The 29 deaths from scarlet fever showed a decline of 39 from the corrected average number; among the various boroughs the greatest proportional mortality from this disease occurred in Kensington, St. Pancras, the City of London, Shoreditch, Bethnal Green, and Deptford. The 56 fatal cases of diphtheria were only slightly over one quarter of the average number in the corresponding periods of the ten preceding years; this disease was proportionally most fatal in St. Marylebone, Poplar, Wandsworth, Deptford, Greenwich, and Lewisham. The 49 deaths from whooping-cough were 30 below the corrected average number; among the various metropolitan boroughs this disease showed the highest proportional mortality in Shoreditch, Bethnal Green, Stepney, Lambeth, Deptford, and Woolwich. The 58 deaths from enteric fever were 35 below the average number in the corresponding periods of the ten preceding years; this disease was proportionally most fatal in Fulham, Chelsea, Stoke Newington, Holborn, Shoreditch, and Southwark. The 172 fatal cases of diarrhœa were 95 in excess of the corrected average number; the greatest proportional mortality from this disease occurred in Fulham, Bethnal Green, Poplar, Southwark, Camberwell, and Greenwich. In conclusion, it may be stated that the aggregate mortality in London last month from these principal infectious diseases was nearly 30 per cent. below the average.

Infant mortality in London during November, measured by the proportion of deaths among children under one year of age to registered births, was equal to 156 per 1000. The lowest rates of infant mortality were recorded in Paddington, Fulham, City of Westminster, St. Marylebone, Stoke Newington, and Lewisham; and the highest rates in Holborn, the City of London, Shoreditch, Bethnal Green, Southwark, Bermondsey, and Deptford.

# THE SERVICES.

## ROYAL NAVY MEDICAL SERVICE.

Inspector-General of Hospitals and Fleets Thomas Bolster has been placed on the retired list and Deputy Inspector-General of Hospitals and Fleets John C. Birkmyre Maclean has been promoted to the rank of Inspector-General of Hospitals and Fleets.

The following appointments are notified:—Fleet Surgeons: C. W. Buchanan-Hamilton to the *Glory*; C. E. Geoghegan to the *King Alfred* for voyage home; G. Wilson to the *King Alfred* and to the *Leviathan*; S. T. O'Grady to the *Impregnable*; A. G. Andrews to Yarmouth Hospital; C. W. Sharples to the *St. Vincent*; J. O'B. Williams to the *Euryalus*; and J. Dudley to the Royal Marines, Plymouth. Surgeons: J. W. Bird to the *Excellent*; J. Whelan to the *Lion*; J. Martin and R. F. MacMahon to the *King Alfred*; A. J. Laurie to the *Cambridge*; J. Thornhill to the *Kinsha*; H. Huskinson and J. G. Wallis to the *King Alfred* for voyage home; J. E. H. Phillips and N. H. Mummery to the *Aurgalus*; F. Bolster to Chatham Hospital; and F. E. Bolton to the *Resolution*.

## ROYAL ARMY MEDICAL CORPS.

The undermentioned Lieutenants to be Captains (dated Nov. 29th, 1903):—H. J. McGrigor, W. R. P. Goodwin, J. H. Brunskill, A. C. Duffey, A. W. Gibson, C. D. Myles, R. N. Hunt, H. E. J. A. Howley, R. F. M. Fawcett, W. L. Steele, H. A. Davidson, J. W. West, W. Riach, H. R. Bateman, H. G. Pinches, T. White, J. C. Kennedy, A. R. C. Parsons, J. B. Cautley, W. M. B. Sparkes, S. B. Smith, E. W. Powell, J. L. Jones (dated Nov. 30th, 1903); and E. S. Worthington.

The undermentioned Lieutenants are confirmed in that rank:—J. M. M. Crawford, C. Bramhall, T. E. Harty, H. H. Swanzy, J. E. Skey, H. T. Stack.

## INDIAN MEDICAL SERVICE.

The King has approved of the resignation from the service of Captain John Elliott Robinson (dated Nov. 1st, 1903).

## VOLUNTEER CORPS.

*Rifle:* 2nd (the Weald of Kent) Volunteer Battalion the Buffs (East Kent Regiment): Brigade Surgeon-Lieutenant-Colonel T. Joyce, Senior Medical Officer, Sussex and Kent Volunteer Infantry Brigade, resigns his commission and is granted the honorary rank of Surgeon-Colonel with permission to wear the prescribed uniform on retirement (dated Dec. 5th, 1903). 3rd (Dundee Highland) Volunteer Battalion the Black Watch (Royal Highlanders): Alexander Kirk Traill to be Surgeon-Lieutenant (dated Dec. 5th, 1903). 2nd Volunteer Battalion the Prince of Wales's (North Staffordshire Regiment): Surgeon-Lieutenant-Colonel W. G. Lowe resigns his commission and is granted the honorary rank of Surgeon Colonel with permission to wear the prescribed uniform on retirement (dated Dec. 5th, 1903).

## MENTIONED IN DESPATCHES.

The name of Lieutenant Hornabrook, medical officer of the Natal Mounted Rifles, has been added to the list of those mentioned for meritorious service in South Africa in Lord Roberts's despatch of April 2nd, 1901.

## RECENT ARMY ORDERS.

Among the Army orders for December we notice the following:—*Royal Army Medical Corps: Examination of Majors for promotion.*—For the year 1904 the special subjects for the examination of majors, R.A.M.C., for promotion to lieutenant-colonel, referred to in paragraph 5 (*a*), (*b*), and (*c*), Appendix VIII B (formerly VIII A) of the King's Regulations will be: Subject 5 (*a*), Medical History of the more important campaigns; Subject 5 (*b*), A general knowledge of the Army Medical Services of other Powers. Candidates will not be examined in subject 5 (*c*), The Laws and Customs of War.

## GONORRHŒA AMONG SOLDIERS.

In a clinical lecture delivered at the Val-de-Grâce School of Military Medicine and reported in the *Archives de Médecine et de Pharmacie Militaires* for October, Professor Toubert quotes some remarkable statistics regarding the prevalence of gonorrhœa at the present day and lays emphasis upon the necessity of paying the greatest attention to the treatment of the affection when it occurs in soldiers. According to Neisser blennorrhagia follows next to measles as the most widespread of all diseases. At Breslau from 15 to 30 per 1000 of the military population, and about 87 per 1000 of the students were affected; while in New York, according to Nœggerath, out of every 1000 men who get married 800 have had the complaint, no fewer than 720 of these remaining uncured at the time of their marriage. Gonorrhœa, though less dreaded than syphilis, is nevertheless a most serious disease, capable of causing disastrous results not only in the males primarily affected but also in the innocent females to whom they impart the contagion. With proper treatment the prognosis in gonorrhœa should be favourable, but unfortunately medical men, in Professor Toubert's opinion, may, generally speaking, be said to neglect the disease. They, as a rule, underrate its insidious and tenacious character, treat its symptoms more or less empirically, and do not take the trouble to assure themselves that its seeds have been thoroughly eradicated. As soon as the more prominent manifestations have disappeared or become latent they dismiss their patients, although still in a condition which cannot but render them dangerous to society. Before pronouncing a gonorrhœal subject cured the most searching verification of the fact is necessary. Rough tests alone, such as beer drinking or the well-known procedure of Guyon, are not sufficient; a thorough exploration of the urethra from one end to the other is absolutely essential, together with a systematic examination of the urine. Professor

Toubert reposes great faith in the *explorateur à boule*. In skilful hands this is a most useful instrument for the detection of localised centres of infection. Although, as Desault said, gonorrhœa may often "die of old age" still in some cases it may persist for years. Ricord met with a case of 40 years' standing and Desormeaux with one of 50 years'. The *vis medicatrix naturæ* alone will seldom effect a perfect cure. Sometimes in chronic cases a keratinised condition of the urethral mucous membrane interferes with the action of local remedies. When this takes place Professor Toubert directs the patient to retain in his urethra by mechanical means about five cubic centimetres of the following solution for a period of from one to three hours: hermophenyl, 0·75 gramme; protargol, 0·75 gramme; glycerine, 30 cubic centimetres; chlorhydrate of cocaine, one gramme; water, 1 litre. This solution may be made stronger or weaker according to circumstances. In conclusion Professor Toubert says: "From the day when gonorrhœal affections shall be treated methodically during their acute stage they will cease to become chronic. ..... For many reasons the treatment of blennorrhagia deserves more than the indifference, or it may be the disdain, which heretofore it has too often met with on the part of medical men even more than from patients."

### INDIAN MEDICAL SERVICE.

The *London Gazette* of Dec. 4th contains revised regulations for the Indian Medical Service which provide that the substantive ranks of medical officers in the Indian military forces shall be as follows: surgeon general (ranking as major-general), colonel, lieutenant-colonel, major, captain, and lieutenant. Subject to certain conditions, a lieutenant shall be promoted to the rank of captain on completing three years' full pay service, a captain to the rank of major on completing 12 years, and a major to the rank of lieutenant-colonel on completing 20 years. Time on half pay not exceeding one year shall be allowed to reckon as service for promotion under Articles 2, 3, and 4 where removal to half-pay has been the consequence of ill-health caused by military service. A captain, after at least six years' service, a major, or a lieutenant-colonel may be promoted to the next higher rank by brevet for distinguished service in the field or for distinguished service of an exceptional nature other than in the field. A certain number of lieutenant-colonels may be specially selected for increased pay for ability and merit. Promotion from the rank of lieutenant-colonel with increased pay to that of colonel, and from the rank of colonel to that of surgeon-general, shall be given by selection for ability and merit. A lieutenant-colonel may also be promoted to the rank of colonel and a colonel to the rank of surgeon general for distinguished service in the field. Exchanges between officers of the Indian Medical Service and officers of the Royal Army Medical Corps below the rank of major, and transfers of such officers from either of these services to the other, shall be permitted subject to the approval of the Secretary of State for War and of the Secretary of State for India in Council, and on the following conditions: (1) that the officers shall not have less than seven years' service; (2) that the senior officer exchanging shall take the place of the junior on the Departmental List and shall not be promoted under Article 3, 4, or 5 until the officer next above him shall have been so promoted; (3) that the junior officer exchanging shall be placed for seniority next below all medical officers whose commissions have the same date as his own; and that the officer transferred shall be placed for seniority below all medical officers holding the same rank at the time of his transfer and shall not be promoted under Article 3, 4, or 5 until the officer next above him shall have been promoted. With a view to maintain the efficiency of the service medical officers shall be placed on the retired list when they attain the following ages: surgeon-general and colonel at 60 years and lieutenant colonel and major at 55 years.

### THE JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

The sixth number of this journal, so far from showing any sign of decreasing interest and usefulness, seems to be growing and developing in a satisfactory and promising way. Among the articles in the December number we may refer to an excellent paper by Lieutenant-Colonel R. H. Firth on a Comparative Study of Some Dysentery Bacilli and to a very useful and instructive contribution from Lieutenant-Colonel W. G. Macpherson, C.M.G., R.A.M.C., on the German Regulations for Utilising Voluntary Aid in War. Those who are at all interested in the subject of voluntary-aid organisations will do well to read what Lieutenant-Colonel Macpherson has to say.

### RECRUITING OFFICERS.

We are glad to notice a change introduced into the regulations for recruiting which we have long advocated as very desirable in the interest of the service. Instead of having army recruiting officers located in undesirable positions or hidden away in back streets, as has hitherto been the case, we read that "in hiring recruiting houses and rooms only such as are suitable in every way and situated in respectable localities will be selected."

# Looking Back.

FROM

## THE LANCET, *SATURDAY*, DEC. 10, 1825.

### TOBACCO SMOKING.

*To the Editor of* THE LANCET.

SIR,—If some of your friends will answer this note, the answer will be read with interest by many individuals.

In Turkey, Spain, and Portugal, a peculiar mode of smoking prevails; the smoke of the pipe or segar, is quietly inhaled with the breath, and allowed to pass through the nostrils, without any effort, by the mere expiration of the breath.

Medical men in England refuse to allow that the smoke passes into the lungs, but if they were to see the method of smoking practised by Turks, &c., they would probably allow that it is actually inhaled into the lungs.

In Spain and Portugal, a thin paper, manufactured from straw, and without size, is used for making segars, by rolling up some tobacco in the paper, until the whole is about the size of a common pencil and the length of a finger.

The tobacco itself cannot get into the stomach or lungs, as in the case of snuff-taking, nor can the raw juice of the tobacco do it, as in the case of quid-chewing; but the mouth, nasal passage, and (I think) the lungs, gullet, and stomach, must be powerfully coated with smoke, and whatever that smoke contains.

Turks are perpetually smoking; Spaniards and Portuguese use tobacco profusely; and since the army returned from the Peninsula, the habit has become fashionable; the increased number of tobacco shops must be evident to every observer.

Now, Sir, I should be glad to know, and I believe a great number of persons besides myself would be glad to know, what effect must be produced upon the structural and functional condition of the stomach and lungs by this habit.

I am, respectfully, Sir,
Your very obedient servant,
CIGARRO.

*** If "Cigarro" were alive what would he think of the prevalence of smoking? Medical men now know that genuine inhalation does take place, though probably it does not occur so often as is believed. Abuse of tobacco brings evils that have been widely recognised, but as to the pathological effects of its moderate use there is as much doubt now as there was when "Cigarro" addressed us on the subject nearly 80 years ago. This has been recently shown by correspondence in our columns.—ED. L.

DURHAM UNIVERSITY MEDICAL GRADUATES' ASSOCIATION.—Dr. Frederick Spicer, the President, took the chair at the autumnal dinner of this association which was held at the Café Monico on Dec. 3rd. The toast list was limited to the usual loyal toasts and that of the University of Durham and they were given from the chair. Sir William Selby Church, Bart., who was recently elected an honorary member, paid the association the compliment of attending the dinner as a member.

# Correspondence.

"Audi alteram partem."

## THE NEED FOR FURTHER REFORMS IN THE DEPARTMENT OF ANÆSTHETICS.

*To the Editors of* THE LANCET.

SIRS,—I have naturally enough been greatly interested in the letter of your correspondent dealing with the Relation of the Anæsthetist to the Patient and to the Surgeon, and whilst fully agreeing with the leading article in THE LANCET of Nov. 21st, p. 1442, and with the anonymous writer of the letter in the same issue as to the present unsatisfactory nature of these relations, I would submit that the reform proposed, which is in itself an excellent one, is of secondary importance as compared to other reforms which are, to my mind, more urgently needed in this department of practice. For many years past it has seemed to me that if the profession is to do itself justice, if the interests of the public are to be properly safeguarded, and if the anæsthetist is to be given his right position certain changes must be made in the very foundations of this department. The principles under which we have worked and still work have grown up side by side with, and have been dependent upon, certain conditions in the great field of surgery, but as these conditions have completely changed it is obvious that our principles should have changed also and in a corresponding degree. May I therefore be permitted to indicate some of the more pressing reforms which seem to me to be called for?

I do not deny that the position of this department has within recent years somewhat improved and that the public and profession have thereby benefited, but there is ample evidence that further reforms are necessary. The very fact that improvement is noticeable is in itself an indication that the roads along which we have been travelling have been the true roads of advance and an argument for pushing forward in the same direction. The causes which have led up to this somewhat improved state of affairs are not difficult to define. The better education of students, the inclusion of the subject of anæsthetics in the curriculum, the appointment of special anæsthetists on a more extensive scale, and, above all, the dissemination and appreciation of the proper principles of anæsthetisation, these are amongst the most important. It is also satisfactory to observe that the attitude of the profession as a whole towards this branch of practice has distinctly changed during recent years. This change is doubtless due partly to the revolutionary advances in surgery brought about by Lister's great work which have had the effect, as I shall presently show, of giving to the risk of surgical anæsthesia its true significance, partly to so much attention having been devoted to the problems of the subject by some of the ablest physiologists of our day, and partly to the recognition by the profession of the advantages that have accrued from the establishment of special departments and from the appointment of special officers for those departments. But this slightly improved position of the department and this fuller appreciation of its work should, I think, be looked upon merely as indicating the commencement of a greater development. Our ambition should be progressively to raise our standards with the object of one day providing surgery proper with a far more satisfactory department than that which at present exists. It is therefore necessary to consider our disabilities, and as the foremost amongst them is the present unnecessarily high risk of surgical anæsthesia the first reform needed must be a reduction of this risk. It is only just beginning to dawn upon the profession that this risk may by proper precautions be reduced to infinitesimal proportions, and before any attention can be seriously paid to such comparatively trifling reforms as those which have been suggested by your correspondent we must surely endeavour to introduce a reform of far greater importance—that by which the death-rate of anæsthesia will be so reduced as to become a negligible factor in surgery. All reforms must hinge upon this one.

Let me next endeavour to show how a want of parallelism between surgery proper and that branch of it which we are now considering has come about. Prior to the days of aseptic surgery, when any given surgical operation had its not inconsiderable risk, little was thought of any possible danger from the anæsthetic. The major shadow—the risk of the operation—included and altogether obscured the minor shadow—the risk of the anæsthetic. But improved surgical methods have changed all this, and putting on one side desperate and unfavourable cases the risk to life of a surgical procedure of to-day is, *quâ* that procedure, so small that the scrupulously careful surgeon hardly takes it into consideration. In other words, the fading of the major shadow has brought into prominence the true proportions of the minor and we find ourselves to-day face to face with a disproportion in risk which, whilst it may be creditable to the average operating surgeon, is distinctly discreditable to the average anæsthetist. The enemy has come out into the open and we find that he is more formidable than was supposed. Had surgeons remained satisfied with the comparatively light form of unconsciousness provided for them 30 or 40 years ago this risk of anæsthesia would certainly be less than it is at present. The demands of surgery, however, so far as the depth of anæsthesia is concerned, are far greater than they were formerly and it hence happens that in a considerable proportion of cases that now come to the operating table—cases, for example, in which the patient is termed a "bad subject" whilst the operation is a simple one—the responsibilities of the anæsthetist are as great as those of the surgeon. Moreover, it often happens that this deep form of anæsthesia has to be maintained for protracted periods, so that the resources of the anæsthetist may be taxed to an even greater degree than those of his colleague.

What is the present state of things in actual practice? In hospital we find that the ever-increasing number of surgical operations is constantly calling for modifications in the existing arrangements for administering anæsthetics; there is, however, little or no uniformity in these arrangements. At some hospitals the great majority of the anæsthetics are administered by officially appointed anæsthetists who are as a rule non-resident. At other institutions the great bulk of the anæsthetics are given by clinical assistants, house surgeons, or students, the surgeons holding themselves more or less responsible for the safety of their patients. If, as is generally the case, the anæsthetists are non-resident some of the most difficult cases for anæsthesia—cases such as the visiting anæsthetist may never see for the simple reason that they are cases of urgency—are placed in the hands of comparatively inexperienced house officers. Then again a large number of minor operations are annually performed at most hospitals by house surgeons who may be unable to obtain anything approaching skilled assistants as regards the anæsthetic. It is in this way that so many accidents occur during comparatively trivial operations. In some hospitals certain resident or non-resident officers act vicariously as anæsthetists, a plan which is open to the serious objection that such officers may have no special aptitude for administering anæsthetics, whilst they may be interested in the surgical aspects of the case and so be tempted to pay more attention to the operation than to the anæsthetic. Where there is much pressure of work considerable risk may be incurred by the anæsthetist having insufficient time carefully to examine his patients beforehand, to cleanse or to sterilise his apparatus, and to attend to the numerous details which collectively constitute success. In private practice the state of things is, at all events from the surgeon's point of view, often equally unsatisfactory, for in a large number of cases the medical practitioner wishes to administer the anæsthetic and not having had that practice which is essential for the production and maintenance of the deep anæsthesia which is now safely obtainable, delay and difficulties arise which in a not inconsiderable proportion of cases actually militate against the success of the operation. Much of the discredit which attaches to anæsthesia has originated in this way.

Now what is the result of this unsatisfactory state of things? It may be described as a threefold result. In the first place, the public, as represented by the patients who are subjected to the unskilled anæsthetisation incidental to the present systems, are unnecessarily inconvenienced and alarmed. In the second place, the success of operations is greatly interfered with. In the third place, human life is unnecessarily sacrificed. One is always meeting with patients who give one the most weird accounts of what befel them at the dentists, how they smashed the furniture, assaulted the

dentist, and reduced the apparatus of the inept anæsthetist to a useless and confused mass. How many cases of cleft palate, intestinal obstruction, intra-nasal disease, iridectomy (before the days of cocaine), &c., have been wrecked by an incompetent anæsthetist! And how many of the thousands who have died during surgical anæsthesia might have regained consciousness and health had as much care been taken in the selection of the anæsthetist as in that of the surgeon? It is unfortunately impossible to say with certainty how many patients die each year in this country from the effects of anæsthetics administered for surgical operations. There is good reason to believe that many deaths which should be attributed partly or wholly to the anæsthetic are annually returned as due to strictly surgical causes. But the returns of the Registrar-General of births, deaths, and marriages for the four years ending 1901 (the last year of the published reports) show that there have been no less than 433 admitted deaths from anæsthetics—a number which, even though it be, as I believe it is, much below the true number, is sufficiently alarming. It is, of course, clear that with the ever-increasing number of surgical operations the number of deaths from anæsthetics must increase unless some radical changes be made in our administrative systems. As we have no means of knowing to what extent surgical operations have increased in frequency we cannot draw any conclusion from these data as to any increase or decrease in the anæsthetic death-rate. Personally I feel that the performance of even a so-called trifling operation under an anæsthetic is a sufficiently important event to warrant some kind of registration or notification, and were there some system of this kind in operation it would be an easy matter to work out the death-rates from different anæsthetics and to observe the effects which the better equipment of public institutions, as regards the use of anæsthetics, might reasonably be supposed to produce.

But as things stand at present we must be content to note that in the past four years no less than 433 patients have admittedly died from surgical anæsthesia in England and Wales alone. Were the death-rate from anæsthetics a recognised and inelastic figure, were it incapable of reduction save to a very limited extent by the adoption of every known precaution, I should have but little to say. But that is not the case. There is, perhaps, no function performed by the medical practitioner which has such a wide range of possibility about it as the administration of an anæsthetic for a surgical operation. It may appear to be, and indeed often is, such a simple procedure that the services of a qualified person may seem to be superfluous; it may be such a difficult and responsible matter that nothing short of many years' special experience may suffice to insure a successful issue. Want of skill in surgery proper rarely involves the surgeon in that appallingly sudden conflict with death which the happy-go-lucky anæsthetist is liable to experience. Now if the death-rate from anæsthesia is to be reduced it is quite clear that the first essential must be the sending out into practice of anæsthetists whose general and special training has been such as to enable them to carry out their important duties with success. I am not a great believer in statistics, and I do not quote the above figure with any intention of drawing conclusions from it. I merely direct attention to the fact that despite our increasing knowledge as to the effects of anæsthetics large numbers of patients annually die under the influence of these substances, and I submit that with the object of checking this excessive mortality it is our duty more efficiently to equip the profession with competent anæsthetists. There should be an adequate supply of well-educated and experienced anæsthetists to meet the demands both of hospital and private practice. From the point of view of the public it is quite clear that it is incumbent upon all institutions in which anæsthetics are employed to use every means in their power to provide for their safe and efficient administration. The present unsatisfactory state of things in some quarters is a reproach to the profession. It ought not to be possible for a patient to enter a hospital and to be anæsthetised by an inexperienced man unless, of course, the administration be conducted under supervision. Lives have over and over again been sacrificed, and, indeed, are still being sacrificed, simply because the patient, whose general condition perhaps is good but who has some local mischief, the significance of which in relation to the anæsthetic has been wholly overlooked, is anæsthetised by an unskilled person. Surely it is our duty to make it next to impossible that lives should thus be lost.

The first step that should be taken in hospital practice is the establishment of special departments for the administration of anæsthetics in those institutions in which such agents are constantly being administered but in which no such departments at present exist, and the exercise in the future of greater care in the selection of officers controlling such departments. In small hospitals or dispensaries in which anæsthetics are only occasionally needed and in which no medical officer exists who has had special experience in anæsthetics, it should be possible to secure the services of an extraneous but experienced anæsthetist when necessary. But not only should hospital patients be thus protected but patients of the upper and middle classes, who are often quite as ignorant as those of the lower classes of the risks they may be incurring, should have their interests similarly guarded. This end may be attained by placing the administration of the anæsthetic, even though the operation be but the simple extraction of a tooth, in the hands of those who have had special hospital experience in the use of anæsthetics. If there were more hospital appointments in this department every provincial town might possess at least one specially trained anæsthetist whose time might be wholly or partly spent in the practice of surgical and dental anæsthetics. Dentists would, I feel sure, welcome such an advance. Were there, as I venture to think there should be, more officially appointed anæsthetists at our hospitals, non-resident or resident as circumstances might dictate, a considerable percentage of medical men entering practice would by virtue of such an arrangement be competent anæsthetists. By such a scheme a house surgeon who had, under the supervision of one of the anæsthetists of his hospital, shown aptitude in this department might become a resident anæsthetist for three or six months, whilst those who passed into practice without having held any junior hospital appointments would not be expected, as they are at present, to take upon themselves the often unwelcome duty of administering an anæsthetic for a surgeon accustomed to, and dependent upon, skilled assistance.

Certain objections will, I know, be advanced against such a scheme. It will be urged that, so far as hospital practice is concerned, the present junior officers who administer anæsthetics, without being officially recognised anæsthetists, would lose much valuable practice. But there would be no objection whatever to house officers, clinical assistants, and, in fact, any qualified men administering anæsthetics as at present, provided that an officially appointed anæsthetist, visiting or resident, were in attendance. By this plan experience would be more readily acquired than at present, for the origin of difficulties would be more quickly understood. Then, as regards private practice, those who are now engaged as specialists will doubtless demur at such wholesale additions to their ranks. But by the scheme proposed most of the men who have held official hospital appointments in this department would only practise secondarily as anæsthetists. I do not think that the plan proposed would seriously interfere with those who desire to devote themselves entirely to this branch of work; there would still be a need for the services of such specialists as teachers in all large hospitals and schools and there would still be a demand for them in private practice.

Next, let me plead for a better type of anæsthetist. Whilst it is customary to place at the disposal of hospital patients so long as they are conscious the services of the most eminent physicians and surgeons of the day, it is also customary directly it becomes necessary to render such patients unconscious to hand them over to the care of comparatively uneducated and inexperienced junior officers who are left to do the best they can for their patients during what may be to the latter the most critical hour of their lives. It is difficult to see any reason why the administration of the most powerful agents in the British Pharmacopœia should be placed in the hands of medical men whose qualifications and professional attainments are, as a general rule, inferior to those of other officers. As I have already said, the requirements of surgery have changed. The present position of the average anæsthetist is, in fact, out of all proportion to the important functions which he performs. With a higher type of anæsthetist the progress of the department towards the final stages of its development would be assured: the dangers incidental to the practice of a somewhat restricted specialty would be counteracted by the possession of literary and scientific attainments which would be likely to bear fruit in such a practical field; whilst the relation of the anæsthetist to the surgeon on the

one hand and to the patient on the other would be far more satisfactory than it is at present.

In conclusion, I would venture to make the following suggestions with the hope that they may constitute a basis upon which the question of reform may be considered by those who like myself are interested in the subject. Suggestions upon some such lines might with advantage be considered by the governing bodies of the various hospitals and medical and dental schools of the United Kingdom in the hope of establishing some uniform system by which the public would be better served both in hospital and private practice.

1. In all institutions in which anæsthetics are frequently administered special departments should be formed if not already established.

2. In all such institutions there should be at least one special officer to control the department and in large hospitals such an additional staff of anæsthetists as would provide for the efficient working of the department.

3. Resident anæsthetists should be appointed in all hospitals in which the work of the department calls for such an office and these posts should as far as possible be filled by previous house officers.

4. In hospital practice the administration of every anæsthetic should be either conducted or supervised by an officially appointed anæsthetist, and no anæsthetic should ever be given unless two qualified persons are present.

5. In appointing senior anæsthetists in the future an endeavour should be made to obtain the services of those possessing the highest medical and surgical qualifications. At each hospital the officer at the head of the department should be a member of the staff.

6. In large hospitals and schools the duties of the head of the department should be upon the following lines: (*a*) he should personally supervise the department, report at least once annually to the lay and medical authorities as to its working, and keep records as to the anæsthetics administered; (*b*) he should personally inquire into any accident that may have occurred during anæsthesia and comment upon the same in his annual report; (*c*) he should be responsible for the system of instruction to the students, giving lectures and demonstrations according to the requirements of the hospital and school; (*d*) he should provide if possible for a proper examination of patients before anæsthetics are administered and in any exceptional case should confer with the medical or surgical officer under whose care the patient may be; and (*e*) he should take such a share in the practical work of the department as may be specified by the authorities electing officers for the department.

I feel sure that if these reforms were introduced it would soon become customary in private practice for the administration of the anæsthetic to be invariably intrusted, not necessarily to specialists, but to those who whilst at their hospitals had acquired such practice in anæsthetising as to make them safe and good anæsthetists. With such an improved state of affairs the death-rate would quickly begin to diminish, many of the difficulties under which the operating surgeon now labours would be removed, the dread of surgery in the public mind would be lessened, and the position of the anæsthetist would be distinctly more commensurate with the importance of his office.

I am, Sirs, yours faithfully,

Queen Anne-street, W., Nov. 28th, 1903. FREDERIC HEWITT.

## THE RELATIVE POSITION OF SURGEON AND ANÆSTHETIST.

*To the Editors of* THE LANCET.

SIRS,—Your correspondent "Anæsthetist" touches a question which is of lively interest to every member of his branch of the profession and we must all be as grateful to THE LANCET for opening the subject as for the general tone in which your leading article deals with it. It must be apparent to everyone that whilst in the knowledge of anæsthetics and of the different methods and particular occasions of their use progress has been made at least comparable with that which has taken place in surgery generally, yet as regards the position of the anæsthetist in the estimation of the public at large practically no change has occurred at all. The safe and efficient anæsthetist of to-day reaps little more recognition than was bestowed upon him who in olden times forcibly conducted an open administration of ether or helped to hold his partially narcotised patient while the surgeon endured the discomforts of operating during a "kicking anæsthesia." As your correspondent points out, among hospital surgeons the value and the position of the anæsthetist are recognised. Generally speaking, however, this is not the case throughout the profession and before the position of the anæsthetist in the eyes of the general public can become that which we hold to be now his due it must first be securely established among his professional brethren. I believe, in fact, that recognition without will follow naturally upon full recognition within the ranks of the profession. There are still many hospitals, mostly perhaps in the provinces, but also in London, where the position of the anæsthetist is by no means that which his general and medical qualifications, as well as his work at the hospital, entitle him to hold. It is time that every reputable hospital had upon its staff at least one anæsthetist with qualifications equal to, and a position the same as those held by, the physicians and surgeons of the institution. The first advance then should consist in a higher standard of requirement by hospitals of their anæsthetists. Anæsthetists will then have to rise to the demand. At present there are many instances in which even if the administration of anæsthetics in the hospital is intrusted to a man who has had special experience yet his position is on a different footing from that of the medical staff. This is natural enough so long as he is not required to be a man as highly qualified as the physicians and surgeons. The standard of the anæsthetist being thus put on a higher plane at the hospitals his status will correspondingly rise in the profession at large. When medical men generally realise the necessity for specialisation in this matter if the best results are to be obtained, and for due recognition of the specialist's position, it will not be long before the general public, too, take an interest in the question of who administers anæsthetics to them. It does not, however, seem feasible, or even necessary, save in exceptional instances, that the anæsthetist should be consulted beforehand. Moreover, it is right that the surgeon should have the deciding voice in the choice of anæsthetist. At the time of operation, however, a short interview with the patient whilst, for instance, the surgeon's preparations are being made should, I think, be the regular practice, as it already is with some surgeons. A short preliminary interview of this kind seems to me the very least that is demanded if the safety and comfort of the patient are to be properly regarded.

After operation the anæsthetist is not seen again. He disappears into an obscurity as dark as that from which his patient emerges. Yet if it were not for the fact that the essence of his services is the unconsciousness of the subject the anæsthetist would gain from every patient the gratitude and regard which are his due for the part that he plays towards securing the safety and success of an operation. It is this regard that we all cordially join "Anæsthetist" in desiring.

I am, Sirs, yours faithfully,

Nov. 27th, 1903. J. BLUMFELD.

## THE BORDERLANDS OF INFECTIOUS DISEASES AND THEIR MANAGEMENT.

*To the Editors of* THE LANCET.

SIRS,—Dr. Biss's paper raises in my mind, as it appears to have also in Dr. Dukes's, a more than suspicion that he does not mean merely to emphasise the fact that in these diseases diagnosis is often difficult but that he believes that some of them, such, for instance, as scarlet fever and diphtheria, are not only apparently connected with one another but are in reality modifications of one and the same disease, and that this identity is shown by the existence of intermediate forms more or less closely resembling the one disease or the other. And this suspicion is strengthened by reference to the "Plan of Relations of Scarlet Fever" given in the paper. But however tempting such a theory may be I quite agree with Dr. Dukes in believing it to be entirely erroneous, inasmuch as it is unsupported by facts; and I think with him that the term "borderland" as applied to doubtful cases is very unhappy. In any given case (setting aside mixed infections) we are entitled to make one of three statements: either the case is one of (say) scarlet fever or it is not, or we are not certain whether it is or is not. But we are not entitled to say that it is nearly or partly scarlet fever, and that I take it is what "borderland" means. Such a term, like the word "hybrid" at one time applied to

rubella, is likely still further to confuse diagnosis. If, however, Dr. Biss's object is to emphasise the difficulties of diagnosis then I sincerely hope that his paper will have the desired effect and that it will lead to the exercise of more care on this point, though it is no less sad than remarkable that at this time of day it should be thought necessary to write at such length to demonstrate that membrane is not essential to diphtheria, that the rash may be wanting in scarlet fever, and that the diagnosis of some forms of sore-throat is difficult—facts which were known and taught years ago by Graves and Trousseau [1]

Dr. Dukes in his criticism of Dr. Biss's paper makes a statement which shows how widely different may be the experiences of two medical practitioners, the one resident in Rugby, whose personal knowledge of infectious disease has, I understand (Dr. Dukes will correct me if I am wrong), mostly been acquired from an attendance upon a large school of boys belonging to the better classes of society; the other resident for some years in a fever hospital whose patients come from the crowded East of London. The statement I refer to is that in the position he holds it is so infinitely rare for these diseases to occur as single cases. Just so, in the position he holds. But in London the occurrence of single cases, whether masked or patent, is of anything but infinite rarity. Infinite rarity is for all practical purposes the equivalent of total absence, so that Dr. Dukes has to all intents and purposes to wait never more than a few days before his doubts as to the nature of the disease are set at rest. Would that I were as fortunate as he in finding so simple a solution of my difficulties!

Dr. Dukes more than once makes use of the statement that these diseases breed true. I am not quite sure exactly what is meant by this expression. I think different writers use it in different senses. If by breeding true Dr. Dukes means that if an unequivocal case of a given infectious disease (say scarlet fever) gives rise to another unequivocal case then the second case will also be one of the same nature (scarlet fever and not measles, &c.), then I am at one with him. But if he insists that an unequivocal case of scarlet fever necessarily gives rise to an unequivocal case of scarlet fever then I demur: for the unequivocal case may give rise to the equivocal and (as Dr. Dukes himself admits) the equivocal to the unequivocal; and lastly, a fact which Dr. Dukes's experience of the infinite rarity of single cases has apparently led him to overlook, a case, whether equivocal or unequivocal, may never breed at all.

Laying hold of a somewhat loose expression in Dr. Biss's paper Dr. Dukes seizes the opportunity of making an attack on the administration of fever hospitals which I am surprised to find coming from him. The question of the value and influence of fever hospitals is one that will not be profitably discussed unless it is discussed with fairness. Doubtless the question of administration is involved in the wider question. But I think that before Dr. Dukes wrote what he has written about the want of observation and quarantine rooms in fever hospitals and descended to the use of such phrases as "setting their house in order" and "saving these hospitals from themselves" he might have taken the trouble to find out what has been done and is being done with respect to details of administration, not only by lay committees of management but also by certain members of his own profession who occupy positions to the responsibilities of which they are quite alive.—I am, Sirs, yours faithfully,

Homerton, N.E., Dec. 2nd, 1903. E. W. GOODALL.

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*To the Editors of* THE LANCET.

SIRS,—I should, indeed, be neglectful of the amenities of debate did I fail to express my appreciation of Dr. Clement Dukes's graceful compliment to myself before seeking to reply to his criticisms on my paper on the Borderlands of Diphtheria and Scarlet Fever. The pleasure I feel at his kind words is the keener in that they come from so illustrious a worker in the same field as myself. But I must not allow my sense of Dr. Clement Dukes's courtesy to blind me to the fact that he traverses my whole argument, in so far at least as he interprets it in the sense I intended. My contention briefly was this. That the study of these diseases brings into relief a general principle of medicine—namely, that diseases are only conventional names for certain departures from health; that as all departures from health are merely changes of state there can be no hard-and-fast line between any diseases; that by taking a little group of closely allied diseases one can advantageously trace the transition-steps between them; that this study is best pursued by regarding those cases of sickness that do not bear the text-book features of any single disease; and, finally, that due attention to these considerations will show that the art of diagnosis—that is to say, skill in assigning cases of sickness to definite groups—is limited because it cannot assign sicknesses to groups that do not exist. To these propositions Dr. Clement Dukes replies: 1. That diseases never lose their identity; though they may vary in type they always breed true. 2. That cases are not borderland cases when they infect others. 3. That the poisons which generate infectious diseases are "absolute entities." 4. That fever hospitals are very bad places because borderland cases (which are not borderland cases) cannot be isolated from each other in them.

Let me deal briefly with these *seriatim*: 1. This is, of course, the conception of disease at which my shaft was levelled. It seems to me a cramped and artificial one. It presupposes that disease is an entity in itself, something foreign and external which is superimposed on a patient, and not, as I should regard it, merely a concatenation of morbid changes in sick people. Two persons are ailing with the same symptoms. We say they have the same disease, but we mean that in them there are similar perturbations in similar tissues. But one may have some perturbations that the other has not. Let us say that of two patients with sore throats one has an erythematous rash of the skin, whilst the other has not. Are they still suffering from the same disease? It is a question of degree. The decision we come to, the diagnosis we make, depends upon the weight we individually or collectively attach to particular phenomena or groups of phenomena. It may seem advantageous to assign one case to this "disease," another to that, or they may be regarded as variations of the same "disease." At a certain point the links may be equally strong with two "diseases." In that case the disease is undiagnosable. If we hold this view, what becomes of the expression "breeding true"? I confess that to me the phrase smacks more of the empiricism of the dog-fancier's yard than of the exactitude of scientific ideas. Is it, moreover, not somewhat of a shibboleth? Does not variation constitute the basis of the breeder's art? Are not deviations from the "truth" the potent element in all development or degeneration of species? Identity becomes lost after a number of variations have been passed through. Is the gorgeous double dahlia of to-day the same as the modest bloom that Dahl brought to Europe three centuries ago? or, to put a stronger case, is a bird a reptile? 2. This contention of Dr. Clement Dukes's is more rhetorical than real. A case may be far from the mean of one disease and near the border of another disease and yet serve as a source of infection to others of one or even both these diseases. 3. I fear I cannot reply to this contention, as it is so vaguely expressed that it is difficult to attach an exact meaning to the phrase. What are the "poisons"? and what does "generate" mean in this connexion? I fear that my spectacles are not sufficiently polychromatic. 4. I was not concerned with the defence of our isolation hospital system. It has many faults and many disabilities, of which no one is more conscious than I. My practical point was to show how far some of these disabilities reached. If Dr. Clement Dukes will support Dr. C. Killick Millard's proposal for inquiry into this question he will have my cordial coöperation.

I am, Sirs, yours faithfully,

Eastbourne, Dec. 2nd, 1903. HUBERT E. J. BISS.

[1] Sanné's remarks on "Diphthérie sans Diphthérie," alluded to by Dr. Biss, are almost word for word those used by Trousseau at the commencement of his lecture on "Common Membranous Sore-throat."

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## HETEROGENESIS.

*To the Editors of* THE LANCET.

SIRS,—I unfortunately overlooked the letter of Dr. J. M. Fortescue-Brickdale in THE LANCET of Nov. 21st, p. 1459, which has only this day been brought to my notice. It contains some rather serious misrepresentations of my views and statements which ought not to pass uncorrected.

In the last paragraph of his letter the writer distinctly intimates that I "ignore entirely the results of the direct injection of tubercle bacilli in pure cultures into animals." This suggestion is absolutely devoid of all foundation. I freely admit that tubercle bacilli may and do act as veritable contagia in the spread of the disease alike in the lower

animals and in man and I am surprised that anyone should suppose I think otherwise. This erroneous suggestion must, I suppose, have owed its origin to my expressed belief that the disease is sometimes generable apart from contagion, coupled with the widely spread notion that a contagious disease cannot arise *de novo*, the latter being a conclusion which to many seems to have been made certain by the discovery that micro-organisms constitute the contagia of so many of the communicable diseases.

Granting the facts of contagion, let us look for a moment at the possible modes of origin of a contagious disease. One or other of three views may be held concerning the origin of the contagium. We may, to put it briefly, believe (1) in special creation; (2) in transmutation; and (3) in its *de novo* origin.

1. We have in the first place the notion that the various contagia have been specially *created* with a view to the production of this or that disease. This surely cannot be regarded as a scientific hypothesis. It is a teleological conception entirely out of harmony with existing beliefs. And if it is to be rejected a *de novo* origin, either in present or in past times, by one or other of the two remaining modes of origin is alone open for our acceptance. It is well that this should be fully realised.

2. The second view implies that there is no absolute demarcation between non-pathogenic and pathogenic organisms, and in its favour there is an immense amount of evidence showing the mutability, both in form and in function, of the micro-organisms in question. Some who do not adequately appreciate the weight of this evidence are, as a distinguished physician has lately said, willing to subscribe to the view that "the origin of the germs of disease was probably in the remote geological past," even though as to all the conditions of such occurrences they must be absolutely devoid of all knowledge. This is a nebulous and unsubstantiated point of view which does not appeal to me. I prefer to seek for actual evidence of the occurrence of such transformations in the present day, and for this reason, in your issue of Oct. 31st, p. 1220, I called attention to the conditions of origin of two experimentally produced forms of septicæmia and contended that a fair and impartial consideration of the evidence (apart from unproved assumptions) should lead to the belief that both "Davaine's septicæmia" and "Pasteur's septicæmia" had been produced over and over again *de novo*, and that the micro-organisms by which they are characterised (if not arising independently) must in such cases have been produced by the transformation of common organisms. In the case of "Davaine's septicæmia" the disease has been caused by the injection of two or three drops of putrid blood taken from a previously healthy animal. Such blood soon swarms with organisms of different kinds. The deadly specific germ could not have been contained in the healthy animal from which the blood was taken, and the specific bacillus ultimately produced in the putrefying blood is said never to have been recognised in the outside world apart from such blood. To assume, nevertheless, that this specific germ is omnipresent in the atmosphere and ever ready to drop into the blood with which experiment is about to be made seems to me an absurdly gratuitous and unfounded supposition. All the evidence points rather to the conclusion that the specific bacillus has been produced from one of the common forms at some particular stage in the putrefactive process. Again, in regard to "Pasteur's septicæmia," the fact that this disease can be produced in a previously healthy animal within 24 hours by the injection of a germ-free chemical irritant into its peritoneal cavity cannot, I think, be satisfactorily explained by supposing that the organism which is the cause of the disease is always present in the intestine, and that the setting up of an intense inflammation in the peritoneum leads it to multiply rapidly and at once to begin to make its way through all the coats of the intestine in order to get into the peritoneal fluids. These are assumptions devoid of proof, and if Dr. Fortescue-Brickdale is disposed to give them credence it seems a pity he should not have recollected that some of the same germ-free chemical irritant introduced into the subcutaneous tissue of the healthy animal under conditions, as Sir J. Burdon Sanderson said, "which preclude the possibility of the introduction of any infecting matter from without," will nevertheless give rise to the same contagious disease. Do the organisms which characterise it exist also in the subcutaneous tissues of healthy animals or does he suppose them to be so abundant in the air that they are always ready to baffle the most skilful experimenter whenever an opening is once made in the skin, however minute this may be? It is, moreover, an absolute error for Dr. Fortescue-Brickdale to say that I regard the bacilli characterising Davaine's and Pasteur's septicæmia respectively as "altered forms of the same organism." No such view has been put forward by me. He is further wrong in supposing that I relied upon these experimental researches as furnishing a proof of the *de novo* origin of bacilli. I cited them rather as affording very strong evidence in favour of the transmutation hypothesis and as showing that some contagious diseases do arise *de novo*.

3 When I said in reference to micro-organisms I "have proved the possibility of their *de novo* origin" I was referring to the researches the results of which are recorded in the *Annals and Magazine of Natural History* for October last and to which reference was made in THE LANCET of Nov. 7th, p. 1316. I venture to think that the evidence there recorded, which will also be found in Section xxiii. of my "Studies in Heterogenesis" (to be published next week) is not capable of being explained in accordance with existing knowledge and commonly received views. The only legitimate interpretation of my observations and experiments, as I believe, is that bacteria and their allies can, and do, now arise by heterogenesis and the proof of this possibility I regard as of great importance for the science of medicine.

I am, Sirs, yours faithfully,

Manchester-square, Dec. 4th, 1903. H. CHARLTON BASTIAN.

## THE ALIEN IMMIGRANT.

*To the Editors of* THE LANCET.

SIRS,—I trust you will kindly give me an opportunity of replying in your columns to Mr. Morris Streimer's letter of Nov. 10th[1] and of thanking you at the same time for the very valuable criticism of my book which appeared in THE LANCET of Nov. 7th (p. 1304) and which Mr. Streimer is pleased to describe as "partial." I have been absent in Paris or should have addressed you on the subject before.

Mr. Streimer objects to the assertion that the Jews are "a race apart" and says: "All experience and all study show that once social and legal restrictions are removed the people of any country tend to become homogeneous in their general characteristics." He ignores the fact that it is contrary to the precepts of the Hebrew faith that Israelites should intermarry with Gentiles and that therefore in their case no appreciable absorption among the surrounding populace takes place. They have kept themselves "a race apart" since, as before, their dispersion and are as much so in the United States to-day as anywhere else. I think that any impartial observer must admit that the national spirit among the Jews is increasing rather than diminishing. The great Zionist movement is based upon the national idea and though no trustworthy figures are available it is probable that several millions of Jews are Zionists. Why should Mr. Streimer take exception to the statement that the Jews are a race apart? For myself I can see nothing derogatory in it. Mr. Streimer ridicules my assertion that there are streets in the East-end where "it is an exception to hear the English language spoken." He ignores the official testimony, to which I refer, of Chief Superintendent Mulvaney of the "H" Division who told the Royal Commission on Alien Immigration that in six years 107 streets in Stepney alone had passed *wholly* into the occupation of aliens. It is not probable that the new inhabitants speak English.

I agree with Mr. Streimer when he lays stress on the question of sanitation. I notice that as recently as Nov. 23rd the medical officer of health of Stepney reported a case of small-pox—that of a Russian whose illness was notified two days after his arrival in England. And I observe that Mr. Cluer at Worship-street Police-court on Nov. 18th made the following remarks about some of our East-end immigrants: "You come into this country to make a living, defying or breaking our laws, crowding your dirt and indecency together, and bring your family after you." It is not, in my opinion, the case that "the question of our foreign population is but one aspect of the general social question." The question is whether we wish to have our own social ills aggravated by the constant arrival of aliens of this class who come here in consequence of no natural operation of the law

[1] THE LANCET, Nov. 21st, 1903, p. 1461.

of supply and demand but on account of governmental measures of extrusion adopted in Eastern Europe.

I am, Sirs, yours faithfully,

Chelsea Embankment, S.W. W. EVANS GORDON.

## THE URBAN HOSPITAL TREATMENT OF TUBERCULOSIS.

*To the Editors of* THE LANCET.

SIRS,—The report on the urban hospital treatment of tuberculosis by the committee appointed by the Society for the Study of Disease in Children to inquire into the matter and report to them is still under consideration by that body, and its publication in THE LANCET of Dec. 5th, p. 1590, was owing to an unfortunate oversight. As this report is still *sub judice* its discussion at the present moment would be premature.—I am, Sirs, yours faithfully,

GEORGE CARPENTER,
Senior Honorary Secretary.

Welbeck-street, Cavendish-square, W., Dec. 7th, 1903.

## THE MORTALITY AFTER OPERATIONS FOR STRANGULATED UMBILICAL HERNIA.

*To the Editors of* THE LANCET.

SIRS,—I shall be glad if any of your readers can give me a reference to any statistics with regard to this subject. I have been unable to find any definite information but that it is unexpectedly high I believe.

I am, Sirs, yours faithfully,

Hove, Dec. 3rd, 1903. ARTHUR H. BUCK.

## THE PHOSPHATES AND UREA OF URINE.

*To the Editors of* THE LANCET.

SIRS,—I shall be obliged if you will give me space for a somewhat belated acknowledgment of the communications from Dr. H. Harper, Dr. A. W. Gilchrist, and others, in THE LANCET of the latter end of 1902, and January of this year, referring to a paper of mine on the above subject.[1] These letters appeared at a period when serious illness prevented me from attending to anything, and I have only recently found an opportunity of looking through the back numbers of your journal.

To remove misconception (for I think there was some, partly owing perhaps to the results of the analyses having been tabulated, for the sake of brevity, so that the figures yielded by very different pathological samples were in juxtaposition), I should like to state, chiefly in reply to Dr. Gilchrist:—1. That I never thought to "establish an analogy" between the diseases. In one not a medical man I should think this presumptuous. 2. As a scientific chemist I have long known the desirability that analyses of urine should represent the collective fluid excreted during 24 hours. But for the analyst, and, if I mistake not, for the medical man also, this is very often impracticable. The former, at all events, has to work with just what is submitted to him, frequently by the medical adviser, who cannot help himself. 3. Professing to no knowledge of medicine, I certainly did not intend it to appear as if I had had the temerity to make any precise comparison of the composition of tuberculous urine with that of the fluid from glycosuria or with other samples of urine from similar cases. No data were at my command for this sort of comparison, which was left, of course, to medical men. I sent these analyses, such as they were, to THE LANCET on the chance that they might be of some service or interest to my medical brethren; but I was far from wishing to seem to attach to them undue importance and was particular in giving what information I possessed, as to times, &c., so as to show clearly that the samples were not representative of the entire 24 hours' excretion. Any remarks—they could hardly be called conclusions—were extremely guarded, and confined to comparisons of the most general kind, not with analyses of other pathological urines, but with such statements regarding the limits of composition of *normal* urine as are to be found in ordinary works of reference—by Halliburton, Hammarsten, Allen, Pearmain and Moor, and others; and referred only to the actual samples, *as they were received*. I do not at all claim infallibility for the remarks in question. At the worst, if the paper had no other use, the figures recorded such analytical results as may be yielded in particular circumstances and by limited samples, representing only part of the 24 hours—such as medical practitioners must often be forced to be content with. 4. As far as my own imperfect opportunities permitted me to judge, I was under the impression that there were not very many readily accessible analyses, at all events as full as that of the tuberculous sample, and personally I had never seen any published analysis of urine from a case of *tubercle of the bladder*. For my own information I should be grateful for references to such analyses, and interested to know whether the figures are similar to, or different from, those yielded in *other* cases of tuberculosis, as of the lungs; also whether the "graph" in Dr. Gilchrist's communication represented the results from one sample of tuberculous urine or the mean of several.

Lastly, the cautiously chosen title of the paper, "Observed Variations," &c., was changed in the later communications to "The Low Phosphates and Urea," &c. I must disclaim responsibility for this. My own use (in the paper) of the expression, "low phosphates" related solely to the particular set of analyses and to the actual specimens of urine received, imperfectly representative as they may have been. This was without any universal application or generalisation, such as the latter title might imply: I intended none.—I am, Sirs, yours faithfully,

EDWY G CLAYTON, F.I.C., F.C.S.

Holborn Viaduct, E.C., Nov. 30th, 1903.

[1] THE LANCET, Sept. 6th, 1902, p. 656.

## RADIUM AND THE BACILLUS TYPHOSUS.

*To the Editors of* THE LANCET.

SIRS,—The following experiences with bromide of radium upon cultures of the bacillus typhosus may be of interest to some of your readers. The cultures were of the usual kind, in agar, and were exposed to the rays of 50 milligrammes of the salt for periods varying from 15 minutes to 48 hours. The longer exposures were in the dark in order to eliminate any inhibitory effect of daylight upon the cultures. The tubes containing the cultures were at first placed horizontally above the radium at a distance of five centimetres but were afterwards allowed to rest in an upright position actually upon the mica cover of the box containing the radium, so that the culture received the full rays diverging from below upwards throughout its length. From each tube subcultures were afterwards taken without difficulty and so far as could be observed there seemed to be no inhibitory action upon the growth of the culture. Rather the contrary, for, in the opinion of more than one observer, examining the cultures under a high power, there seemed to be more activity in those cultures which had been subjected to the longer exposures, and in cultures which had been exposed, than in others of the same date which had not been exposed to the radium but had been simply excluded from daylight.

These experiences would seem to lead one in the direction of supposing the beneficial action of radium in certain cases to be that of stimulation of normal tissue rather than directly bactericidal. It is not easy to determine accurately the activity of a radium salt, but at a rough estimate the radium used in this instance is sufficiently strong to make its rays apparent upon the screen through a thickness of 15 coins, half-crowns and pennies. They pass easily therefore through the thickest part of a Cabaud gauge and in therapeutic use an application to the skin of five minutes produces redness and one of ten minutes a slight burn, appearing after two days. The cultures were kindly prepared for me in the laboratory of the Westminster Hospital.

I am, Sirs, yours faithfully,

Beaumont-street, W., Dec. 5th, 1903. R. BROWNE-CARTHEW.

## ST. JOHN'S HOUSE OF REST, MENTONE.

*To the Editors of* THE LANCET.

SIRS,—We are anxious through the medium of your journal to draw the attention of the members of the medical profession to the existence in Mentone of St. John's House of Rest which we believe to be little known to them. The institution, which was founded 25 years ago, is intended for

professional men who in consequence of illness or overwork require rest and a mild climate and who could not otherwise afford the expense of a sojourn on the Riviera. Medical men have occasionally been among the inmates. The house is capable of admitting ten gentlemen, allowing a separate bedroom for each. There are also public drawing, dining, and smoking rooms, a bath-room, and a shelter in the garden for open-air treatment. Applications for admission have hitherto been few so that the house has seldom been filled except for short periods. It is open from Nov. 1st to May 1st. The charge made is £1 a week including medical attendance. We think that medical practitioners must frequently meet with cases for which such a home would prove a great boon. The gentlemen who have resided in the House of Rest have expressed themselves grateful for the care and comfort which they have met with. Of course, such an institution cannot be self-supporting and the sum of £250 is required yearly to meet all the extra cost entailed. We remain, Sirs, yours faithfully,

J. L. SIORDET, M.B., F.R.C.P. Lond.
STANLEY RENDALL, M.D. Paris.

Mentone, Dec. 3rd, 1903.

# Obituary.

## PROFESSOR PROUST.

THE Paris Faculty of Medicine has recently received a severe blow by the very sudden and unforeseen death of Professor Proust. While he was presiding over the delivery of a thesis by one of his pupils on Nov. 24th he was suddenly struck down by a paralytic seizure and although he was at once removed to his home he grew rapidly worse and died on the 26th. He was born at Illiers in the department of Eure-et-Loire on March 18th, 1834. He determined to study medicine and had a brilliant career as a student,

PROFESSOR PROUST.
Inspector-General of the French Sanitary Service.

so that while an *interne* at the hospitals he took his doctor's degree in 1862 at the age of 28 years. In 1866 he was elected agrégé and soon afterwards physician to the hospitals. In 1879 he was elected a member of the Academy of Medicine in succession to Tardieu, and finally, in 1885, he was elected to the chair of hygiene in the faculty of medicine, having acted as deputy for Bouchardat for two years previously. Long before this date, however, his attention had been turned towards the study of hygiene and as far back as 1869 he had been intrusted with an important mission to Russia and Persia for the purpose of studying the best means of fighting against an invasion of cholera. He was next elected a memoer of the Consultative Committee of Hygiene of France, to which body he acted as secretary, and Fauvel nominated him as his collaborator. On Fauvel's death Professor Proust succeeded him as inspector-general of the sanitary service. In every question which he had to consider Professor Proust distinguished himself by the essentially practical qualities of his talents, and he had besides an infinite capacity for work, so that wherever his duties as inspector called him, whether abroad or at home, he never spared himself when any risks were to be run. He was Commander of the Legion of Honour.

## JOHN HENRY SYLVESTER.

DEPUTY SURGEON-GENERAL, I.M.S.

WE regret to announce the death of Surgeon-General Sylvester, which occurred at his residence, 16, Melbury-road, Kensington, London, W., on Nov. 29th in his seventy-fourth year. He began his medical studies at King's College, of which he was an associate, and for a time assisted the late Professor Owen. In 1854 he went to India in the employ of the India Office and served with the 14th Light Dragoons in Persia. During the Indian Mutiny he was with his regiment in the Deccan, Malwa, Nerbudda, Central India, and was also engaged with the Central India Field Forces and with the 1st Regiment of Beatson's Horse in Bundelkhand and Rajputana. In the Umbeylla Campaign he served as field surgeon. For his services in Persia, Umbeylla, and Central India he received the medals and clasps granted for those operations. At Ahrinadmuggar he saw some further service and afterwards became professor in the Grant Medical College at Bombay and assistant surgeon in the Jamsetjee Jeejeebhoy Hospital. He also served for four years on the frontier of India at Peshawur and other places. On his return to Bombay he was appointed ophthalmic surgeon, then professor of physiology and second physician at the Jamsetjee Jeejeebhoy Hospital. He remained in India until 1875 when he retired with the rank of deputy surgeon-general. After his retirement he diligently devoted himself to the study of painting in London, Paris, and Italy, and for the rest of his life that art was a great source of pleasure to him. His best known pictures are a portrait of the present Bishop of Peterborough, which now belongs to the Kensington Vestry and hangs in the board room of the town-hall, and a portrait of Field Marshal Lord Roberts which he presented to the East India United Service Club, and of which engravings were published by Mr. Thomas McLean of the Haymarket. Surgeon-General Sylvester possessed great warmth of friendship and his memory will be associated with the kindest recollections. Until eighteen months ago he enjoyed remarkably good health, leading a very regular and active life, his hobbies, in addition to painting, being bicycling, which he practised daily up to the time of his illness, and fishing. He leaves a widow and one daughter, Mrs. Hodder, the wife of Major Hodder, R.E.

EXTENSION OF THE METROPOLITAN ASYLUMS BOARD'S AMBULANCE SERVICE.—The Metropolitan Asylums Board at its meeting on Nov. 28th decided to extend the operations of its ambulance service so as to include the transport of medical, surgical, and mental cases for which application might from time to time be made by any authority or person within the metropolis. Such extension shall not be held to include the removal of cases of street accident or of patients to and from the several lunatic asylums under the control of the London County Council, unless by special sanction of the ambulance committee or, on emergency, of the chairman of that council or the clerk to the board. It was also decided that upon the necessary legal authority being obtained for the managers from the Local Government Board the work should be immediately undertaken and a charge of 7*s.* 6*d.* made in respect of each removal, and in addition a mileage of 1*s.* 6*d.* beyond the boundary of the metropolis.

# THE INTERNATIONAL SANITARY CONFERENCE AND THE PROPOSED PERMANENT INTERNATIONAL SANITARY BUREAU.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

Paris, Dec. 7th.

IT was on Dec. 3rd and not, as previously anticipated, on Nov. 30th that the International Sanitary Convention was signed. The representatives of the various Governments having broken the continuity of their work and returned to their respective countries it was not so easy to reassemble them, particularly as there was a heavy fall of snow and the roads were blocked in more than one direction. Then after all they had only to be present as a matter of form to sign the document and to exchange mutual compliments. The real work had already been accomplished, for the Conference held its inaugural meeting as far back as Oct 10th last. Altogether there were held seven full sittings. But apart from these it was subdivided into three commissions and these latter met 35 times, so it will be seen that there was a great deal of work done. The convention drawn up as the result of all these deliberations is divided into ten chapters or "titres," to use the official French term, and these are subdivided into 184 articles. The representatives of the following 20 Powers were authorised to sign the convention. The order in which they are placed corresponds with the French alphabetical arrangement: Germany, Austro-Hungary, Belgium, Brazil, Spain, United States of America, France, Great Britain, Greece, Italy, Luxembourg, Montenegro, Holland, Persia, Portugal, Roumania, Russia, Servia, Switzerland, and Egypt. The representatives of the Argentine Republic, Denmark, Sweden, Norway, and Turkey withheld their signatures as they had not yet received the approval of their respective Governments. In spite, however, of these abstentions the Act already bears eight more signatures than the preceding conventions.

It would not be possible in a limited space to give a full account of this lengthy international agreement, nor is this in any wise necessary. The greater part of the convention merely codifies and repeats what had already been agreed upon at previous conventions. Thus the first chapter deals with the general dispositions and describes how the signatory powers are to notify to each other when any cases of cholera or plague occur on their respective territories. Then as before in the part that relates to the precautions to be taken, ships are again divided into three categories. (1) those that are infected; (2) those that are "suspect"; and (3) those that have a clean bill of health. But the great point gained, the new rule introduced, is that the delay imposed upon infected ships is reduced from 12 to seven days. Then again full cognisance is now taken of the discoveries made in regard to the action of rats in spreading plague. So important, indeed, is the destruction of rats considered that this has given rise to the creation of a new word. Therefore, and in common parlance, we are now told that the "deratisation" of ships has become obligatory. A ship is not to be considered as disinfected if there are still any rats living on board.

Then the convention contains a great deal that is applicable to certain localities such as the Red Sea, the Suez Canal, and the Persian Gulf, and there is a whole chapter on the pilgrimages to Mecca and the penalties to be inflicted on the captains of ships transporting these pilgrims who fail to carry out the sanitary regulations. Another chapter is devoted to the international sanitary councils of Constantinople, of Alexandria, and of Tangiers. It was also decided that all the signatory Governments should make representations to the Government of the Sublime Porte so that it should accept the sanitary measures proposed, for without the help of Turkey it will be difficult efficiently to protect the other countries. Yellow fever in the light of recent discoveries in regard to the action of mosquitoes was likewise discussed and, lastly, there arose the question of establishing a permanent international sanitary bureau in Paris. This final proposal is altogether a new departure and it is therefore necessary to give its history in detail. The suggestion was first made at Brussels during the opening ceremony of the Eleventh International Congress of Hygiene and Demography. The representative of the French Government, M. Henri Monod, director of the Sanitary Department at the Ministry of the Interior, on that occasion concluded his speech by saying:—

> There is another form of agreement for which I long most ardently and which I am convinced will be the great achievement of the future. An agreement is established between civilised nations to take measures to oppose and check the invasion of exotic maladies and the worst sceptics are obliged to render homage to the results this has brought about. Why should we not take into consideration, why should we not prepare an agreement, an understanding for common action against endemic and preventable diseases? These latter, if we consider a more lengthy period of time, are far more destructive than the plague, the yellow fever, or the cholera. Why should there not exist one of these days an official international bureau of public hygiene to which all nations would contribute useful information and from which all nations would borrow the elements that contribute to sanitary progress? At this the fiftieth year since the first Congress of Hygiene met it is permissible to dream this dream and to foresee the formation of an international alliance for a common struggle against disease and death which should be, and which one day will be, our only enemies.

These words were greeted with loud applause and in the sections and at the general meeting held for the closure of the congress more than one motion was carried supporting the principle of an international understanding concerning legislature with regard to public health. In the Fourth Section, which dealt with industrial hygiene and where the fear of foreign competition was so often brought forward as a reason for not legislating against unwholesome industries, the President told us that he hoped the Belgian and French Governments would take the initiative to invite representatives of all nations to compare their factory and similar legislation. Then a permanent international office might be formed to help in the unification of such laws, so that the fear of foreign competition should not check the endeavours that were made to save human life. In the section that dealt with the spread of tuberculosis it was strongly felt that the dominating factors were poverty, overcrowding, and over-pressure. Such great evils can scarcely be modified in a large and general sense unless with the aid of legislative enactments. But it will always be easier for a nation to act in this sense if its commercial rivals are also taking similar steps. In this manner, and for many and various motives, the desire to establish something like a permanent international connecting link was very widely manifested. Thus, all that occurred during the Congress tended to confirm the applause that had greeted the suggestion which M. Monod threw out at the opening ceremony.

On his return to Paris M. Monod found that his immediate superior, the Minister of the Interior, had so thoroughly approved what was said in regard to an international bureau that he had submitted the whole question to the Minister of Foreign Affairs. This occurred in the middle of September. On Oct. 10th the International Sanitary Conference met in Paris under the presidency of M. Camille Barrère, French Ambassador at Rome. Nothing more had been said to M. Monod about his speech at Brussels, but after M. Barrère had welcomed the foreign representatives and described at some length the work that was set before them he added these words:—

> Now I reach the last point and its examination will not be one of the least important among the subjects that will occupy the conference. A desire was expressed at the last International Congress of Hygiene by M. Monod that a sanitary office should be created which should be intrusted with the task of centralising information and of exercising a general surveillance over the application of such measures as have been prescribed. This wish, gentlemen, will be reproduced here. A few years ago this appeared premature; the moment now seems to us to have arrived to take in hand its realisation. Perhaps I may be allowed to state, for I have had some experience of international institutions which are at work and are prosperous, that I do not know of any international organisation for which there is to-day a more evident and imperative necessity.

The representative of Italy—and it was from Italy that the request for the meeting of the conference emanated—supported M. Barrère. Commandant Santoliquido, who was the chief of the Italian delegation and vice-president of the conference, said:—

> I shall be allowed here to recall an initiative that will assuredly prove fruitful taken by M. Henri Monod on the occasion of the recent International Congress of Hygiene and Demography held at Brussels. M. Henri Monod proposed, and his proposal was gladly accepted by several official delegates, that an international bureau of hygiene should be created for the common defence of the various States against the reciprocal importation of infectious maladies. Could not such an organisation, or rather this self-same organisation—being a veritable observatory of the development of all forms of infectious diseases—be commissioned to order, when necessity arises in regard to the plague, special measures of defence in countries free from the disease, and could such a bureau not also know the limits and the duration to which such measures should be applied?

The object, the speaker went on to explain, was to render homogeneous the measures taken while at the same time respecting, and avoiding all interference with, the internal policy of the nations concerned and, above all, shunning any contact with politics. Commandant Santoliquido concluded by saying that—

> In any case it is evident that this international bureau, always informed in a very precise manner of all that is happening throughout the world which relates to infectious diseases, would be better able than anyone else to judge wisely what was the real magnitude of the danger and to apportion thereunto measures of defence which would thus spare the countries exposed all economical injury that was not absolutely rendered necessary by the exigencies of our common security. This bureau would also when the necessity arose be equally able to render evident the defects or negligences that may eventually occur in regard to local preventive measures and suggest what modifications were required. The mere fact that such a bureau existed would stimulate all countries to render perfect their individual or national sanitary organisation which is, as I have already said, the essential condition of a really good prophylaxy.

The proposal to constitute an international sanitary office and bureau was supported by all the representatives except those of Great Britain, Germany, and Austro-Hungary. When actually voting on the question, the representatives of five other nationalities, while agreeing with the proposal, desired to refer the matter to their respective Governments. The article instituting the international bureau was carried and it was further decided that it should be established in Paris. M. Monod thought that Brussels would be selected but the Italian representatives proposed, and the Russians seconded, that the town selected should be Paris and this was carried. Nevertheless it is to be clearly understood that the bureau will be absolutely international. The place where it is organised will in no wise modify its character. There will not be more French representatives at the bureau because it is in Paris than if it had been in any other town or country. The cost will be defrayed by all the Governments but it is not thought that the sum needed will be sufficiently large to become an obstacle. However, it is somewhat premature to discuss the details. A project for the organisation of the office or bureau will be drawn up at once and it is thought that it will be ready to submit to the different Governments in about three months' time.

The one trouble in the way, the one cause of perplexity, of anxiety, of surprise, and of disappointment, is the fact that the British delegates did not seem to favour the project. In spite of many and persistent questions I could not get any tangible explanation as to their reasons for the sort of opposition which they made. It was stated that they failed to see that there was any need for such an institution or that it would render any service if established. Evidently, if this was all the British delegates said, then they did not think fit to express their real reasons for objecting. Of course, it is easy to understand that the British representatives might imagine that some continental legislatures were disposed to touch questions which in England were not as yet the subject of legal enactment. But even if this were so, the existence of an international bureau to facilitate the collecting and diffusion of information would not have much influence in making the British Legislature follow some continental example. In any case these are but theoretical objections, for in actual practice the position of affairs presents the reverse to this picture. It is the nations of the continent, on the contrary, which have to imitate the British people. We prevent over-pressure by closing almost all places of business on Sunday, by four bank holidays, and there is a weekly half-holiday besides. We limit the hours of labour for women to ten hours by law and for a very large section of the adult males to nine hours by trade-union action. It will take a long time for the continent to attain this level, so that there need be no fear that association with continental countries will push the British nation to advance more quickly than it desires. On the contrary, it is the British nation which has every interest in seeing continental countries improve the condition of their working classes. If sanitary laws, by the restrictions imposed, are to augment the cost and difficulty of production for the sake of preserving the health of the producer the only objection that can be raised is that by so doing the business itself may be destroyed. Where there is foreign competition such objections are not altogether devoid of foundation. But in England we already do impose such restriction. Employers' Liability Acts and such laws have long been on our Statute-book. If any nation suffers in competing in foreign markets because of increased cost in production caused by the application of laws for the preservation of health it is assuredly the British nation. Therefore we have no reason to fear the institution of an international bureau because it would tend to assimilate the legislation for the protection of labour and health in the different countries. On the contrary, it would be a great boon to the British nation if the laws of the continental countries that deal with these questions could be brought up to our own level. This would do much to lay the bogey of foreign competition. But in all this I am arguing rather from the point of view taken at the Brussels Congress.

At the Paris Conference the representatives were more concerned with international intercourse, the transit of contaminated persons, merchandise, mosquitoes, or rats, than with the condition of various industries and the injuries resulting therefrom to the workers. But in this also we have everything to gain by the publicity that the existence of the proposed international bureau should provide. For instance, occasions may arise when it would be maintained that some particular sorts of merchandise, old rags, carpets, &c., were capable of conveying a certain disease. Therefore these things before they can be introduced into the country must be disinfected. Some such precaution taken against goods of this kind coming from an Eastern or Red Sea port might be very justifiable but would be very vexatious if applied against Southampton or some other port belonging to a nation advanced in the application of practical sanitation. If rags came from a country where disinfection is not obligatory it may be a matter of some risk to import such articles. Therefore, for this and a multitude of other reasons it may be necessary to take more rigorous precautions against the merchandise coming from one than from another country. But who is to make this selection? Would not an international sanitary bureau assist considerably in the making of such selection and what could England lose in such a process? Do we fear being compared with other nations? We have undoubtedly our weak as well as our strong points, but at least in respect to sanitation we can hold our own in the face of the whole world. Indeed, many sanitary reformers of the continent will welcome the creation of the International Sanitary Bureau as a means of making the sanitary measures taken in England better known on the continent and thus it will be easier to get the continental authorities to act in a similar manner. In fact, it in difficult to see what possible disadvantage there can be in the diffusion of information and establishing intimate comparisons between the efforts made in all countries to protect public health. This can only result in helping those who are behindhand to hasten forwards. Just at the moment when the official representatives of so many nations were endorsing this proposal and preparing to sign the convention in favour of the International Sanitary Bureau a large number of members of the British House of Commons were being entertained in a most magnificent manner by the French Government and by the French people. Nothing could exceed the enthusiasm and the friendliness that prevailed. It really did seem as if old antagonism had been completely effaced and as if the two nations had drawn together for a permanent and hearty friendship. At almost identically the same moment there came an opportunity of giving a practical expression of realising in a small way this very evident desire to work hand in hand, and it was the British representatives who drew back, hesitated, and would not pledge themselves to support the new international form of coöperation intended to promote public health in all countries. Such a work could not help incidentally contributing also to promote the cause of international peace and it is to be hoped that the British Government when better informed will see its way to join heartily, if tardily, the great majority of the other nations in creating an international institution that will be of benefit in developing throughout the world an important phase of civilisation.

## LIVERPOOL.

**(FROM OUR OWN CORRESPONDENT.)**

*The Thompson-Yates Laboratories: Death of the Donor.*

THE Rev. Samuel Ashton Thompson-Yates, M.A., the munificent donor of the pathological and physiological laboratories to the then University College, Liverpool, which

bear his name, died in London on Nov. 22nd at the age of 61 years. Prior to his gift of the laboratories Mr. Thompson-Yates had proved himself an enthusiastic friend of education and was a constant subscriber to the University College fund. He was for many years a member of the court of governors and was one of the first to advocate independence for the College. The funeral took place on Nov. 26th at Highgate Cemetery. Vice-Chancellor Dale, Professor C. S. Sherrington, and Professor Woodward were deputed by the council to represent the University of Liverpool at the funeral obsequies. The flag at the University was hoisted at half mast when the news of his death was received. The laboratories were also closed on the day of the funeral.

*Liverpool free from Small-pox.*

For the first time for 18 months the medical officer of health (Dr. E. W. Hope) was able to report, at a recent meeting of the health committee of the city council, that there was not a single case of small-pox in any of the city hospitals. The last patient was discharged on Nov. 23rd. The epidemic had been on the decline for some months and for the last four or five weeks only some half-dozen cases were in hospital. It was therefore with much satisfaction that the committee heard of its absolute disappearance. Scarlet fever, on the other hand, is prevalent; there were 391 cases in hospital on Dec. 3rd. The general death-rate of the city for the past week was 22·2 per 1000 of the inhabitants, as against 25·8 per 1000 during the corresponding week of last year.

*Liverpool School of Tropical Medicine: Ankylostomiasis among Miners.*

At the University of Liverpool on Nov. 27th Mr. Charles Salter gave some results of a tour of inquiry into the outbreaks of ankylostomiasis among miners in Westphalia and Belgium, Professor Ronald Ross being in the chair. Mr. Salter said that the researches of Perroncito at the time the St. Gothard tunnel was being driven showed once for all that the disease was due to the ankylostoma, a worm which adhered to the intestines in the human body. The male of the parasite was from a quarter to one-third of an inch in length and the female was longer and thicker, reaching sometimes a length of half an inch. The female laid between 2000 and 3000 eggs a day, and as these parasites could live in the human body during four or five years their potentiality of increase was very great. Recent research showed that the ova were not capable of reaching the adult stage save in the intestines as a habitat, but the eggs retained their vitality in dirty water for as long as five months. For their development they needed a heat of 68° F. and upwards, a certain supply of oxygen, and exclusion of light. The most favourable hatching medium was, given the requisite heat, damp coal-dust mixed with animal refuse. The supposition that the larvæ could penetrate into the bowels through the wall of the abdomen had been proved by experiment to be baseless. They were introduced into the system through the mouth and the disease owed its propagation to the habit on the part of miners of eating their food with soiled hands. It was chiefly prevalent in warm, damp mines. The symptoms were a complexion of livid grey colour, palpitation, dizziness, loss of appetite, and gastric disturbance, with in bad cases great lassitude. As a result of the epidemic among the miners of Westphalia there were upwards of 17,000 cases this year. The lecturer then described the measures taken by the authorities to cope with the outbreak. The treatment considered safest was the administration of calomel and extract of male fern in alternate doses. This generally produced a cure in about a week. As to prophylactics, the best had been found to be dilute sulphuric acid and ammonia. Both, however, being too expensive to be used as disinfectants on a large scale the only alternative was strict and compulsory rules of sanitation and these, as carried out in German mines, had had a most marked effect. The provision of douche baths, rooms for changing clothing, and properly constructed latrines, as well as mine hospitals, were among the precautions found necessary. He regretted the waiting policy of the Home Office in this country, as prevention would prove far better than cure.

*Presentation to Professor A. M. Paterson.*

On Dec. 5th the annual dinner of the medical students of the University of Liverpool was held at the Adelphi Hotel, and the occasion was taken advantage of to make a presentation to Professor A. M. Paterson who until three months ago had for more than nine years occupied the position of dean of the medical faculty of University College, Liverpool. Sir William Banks presided and about 120 gentlemen sat down to dinner. Mr. Frank Jeans, the honorary secretary of the dinner committee, presented Professor Paterson with a silver inkstand, a silver flower-bowl, and silver candlesticks. He referred to the great success which had attended Professor Paterson's occupation of the office of dean and the great personal and friendly interest which he had always taken in the welfare of the students. In replying Professor Paterson, who was received with prolonged cheering, said that it was a source of great gratification to him to think that of all the students who had passed through his hands 87 per cent. had duly qualified as medical practitioners. He looked upon it as a favourable sign that amongst medical students in Liverpool the "chronic" had almost entirely disappeared. The evening was a great success, the speeches of Sir William Banks and Mr. Edgar A. Browne being very amusing and highly appreciated.

*University of Liverpool.*

At the first meeting of Liverpool University court of governors, held on Dec. 5th, Mr. E. K Muspratt (pro-chancellor) in the chair, appeals were made for further financial aid to assist in the development of the university. The university starts its career by taking over investments valued at £275,000 and lands and buildings worth £230,000.

*Hospitals and their Rates.*

In the issue of THE LANCET of Nov. 28th, p. 1536, reference was made to the remarks of the Lord Mayor (Mr. R. A. Hampson) at the annual meeting of the Hospital Saturday Fund, suggesting the formation of a committee with the object of securing legislation to relieve hospitals from the payment of rates. I understand that a small committee has been formed with that object and will shortly meet at the town hall under the presidency of the Lord Mayor who, as president of the Stanley Hospital, is keenly interested in the question.

Dec. 8th.

## WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

*Overcrowding of Bedwellty Workhouse.*

THE Bedwellty (Mon.) board of guardians has for several years past been aware that some decisive step would have to be taken to increase the accommodation at the Tredegar workhouse. The population of the union in 1901 was 81,820, an increase of 17 219 over the number of persons recorded in 1891, and included within the area of the union are the populous colliery districts of Abertillery, Ebbw Vale, Rhymney, and Tredegar, where there is every prospect of the local industries being still more extended. The overcrowding of the workhouse has been reported upon over and over again during the past three years, not only by the master and the medical officer (Mr. G. A. Brown) but also by the Poor-law inspector of the Local Government Board (Mr. F. T. Bircham). As long ago as December, 1902, it was stated that 17 boys were sleeping in a ward calculated to accommodate only ten and at that time the board room was given up as a sleeping apartment for the inmates and other temporary measures were adopted. At a meeting of the board held on Dec. 2nd last the master reported that there were 355 inmates in the house, although there was only room for 266. Various proposals have from time to time been made to remedy this deplorable overcrowding. The division of the union with the consequent establishment of a separate workhouse elsewhere and the purchase of a large unoccupied house in another portion of the district to be used as a branch workhouse, although suggested, have not been seriously considered and the members of the board of guardians are to be congratulated upon having at last decided to make extensions to the existing buildings upon an adequate scale. The cost is estimated at £27 886 and accommodation will be provided for 100 additional inmates. Properly arranged sick wards and isolation wards will also be erected. It is further proposed to relieve the workhouse by the removal of the children to cottage homes which are to be erected at Tredegar at a cost of £8325. In this group of buildings there are to be four cottage homes, each having accommodation for 15 children and a foster mother. The total expenditure involved will entail a rate of 1½*d.* in the pound for 30 years.

*Ankylostomiasis.*

The possibility of the introduction of ankylostomiasis duodenalis among the colliers of South Wales has recently been freely discussed in that district and it is especially gratifying to find Mr. William Abraham, M.P., the miners' agent, and more popularly known as "Mabon," giving the colliers most excellent advice with a view to prevent any spread of the disease should it unfortunately make its appearance among them. Conferences, too, have been arranged between the colliery owners and leaders of the men in various districts in order to determine what preventive measures should be taken. In a communication to the local press Mr. Abraham states that at a meeting held at the Home Office at the end of November between representatives of the coal owners and of the miners the latter suggested that closets and urinals should be placed near the pit bank and in the pit itself near the pit porch and main passbyes in the return airways, that these places should be examined by the medical officer of health who should also examine any collier suspected of having contracted the disease, and finally that all workmen coming from a district where the disease prevails or has prevailed should be examined by a medical man who should be empowered to place in quarantine any man found to be suffering from the disease. The sanitary committee of the Glamorganshire county council has sent a circular letter to the medical men practising in the county offering the assistance of the Cardiff and county public health laboratory in the diagnosis of suspected cases.

*Side Windows in Covered Vans.*

The Glamorganshire county council, which was the first authority in the country to adopt a by-law prohibiting indiscriminate spitting, is now endeavouring to lessen the number of accidents caused by the drivers of covered vans suddenly altering their direction, unaware that another vehicle, pedestrian, or cyclist is passing. After Jan. 1st, 1904, the following by-law will be in force within the administrative county :—

Every tradesman's van or other covered vehicle intended to be driven by a person sitting inside thereof shall be so constructed with side windows or otherwise as to enable such person to see the approach of vehicles from behind on either side thereof.

The penalty for not complying with the by-law may be £5. The tradesmen who are particularly concerned—bakers, grocers, and others—appear to resent the adoption of this by-law, but its enforcement cannot fail to be of service.

*Glamorganshire County Sanatorium.*

The medical officer of health to the Glamorganshire county council (Dr. William Williams) has reported to the sanitary committee of the council in favour of establishing at the cost of the county a sanatorium for consumptives with accommodation for 30 patients. He estimates the cost of the site at £3000 and of the buildings and furniture at £12,000, or £400 per bed. The annual expenditure is put down at £4189.

*Swansea Technical College.*

The Swansea Technical College is now recognised as a school in which medical students may attend classes in physics and chemistry during the first of their five years' curriculum.

Dec. 8th.

## SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

*A New Out-patient Department for the Royal Hospital for Sick Children, Edinburgh.*

THE out-patient department at the Edinburgh Royal Hospital for Sick Children has grown so greatly since the present hospital was opened some eight years ago that the directors found it necessary to undertake the construction of premises to meet the demands made on the department. Last year 6724 children were attended to in it, while the number of attendances reached a total of close upon 22,000. Not only did the department require enlarging but it required to be refitted in conformity with the present position of scientific medicine. The new department is a two-storey building to the west of the hospital. Patients enter by a south gate inside which there is a covered place for perambulators. Off the entrance open three isolation rooms for children suspected of having infectious disease. Medical cases are treated on the ground floor. The medical waiting room measures 36 by 38 feet and a dressing room opens off it which again opens into the room where the physician in attendance sees the patients. This room also has an entrance from the outside for the students and the staff. The drug dispensary is also on this floor. Upstairs the rooms to the south front contain electrical, ophthalmic, and photographic appliances; those to the north are occupied by the surgical department, including a waiting room, a consulting room, an anæsthetic room, and an operating theatre fitted with all modern necessaries. Occupying a central position is a laboratory for the use of the staff. The floors are of concrete, finished with cement, and the walls are tiled to a height of seven feet. The floors have scuppers and the ordinary angles and corners are rounded, so that the walls can be cleaned by means of the hose. The rooms are heated by means of steam pipes on the low-pressure system and ventilation is aided by extraction fans driven by electricity. The new department, which has been planned and the work carried out with great care, has cost about £6000. It was formally opened on Dec. 8th by H.R.H. Princess Louise, Duchess of Argyle.

*Physiology in Relation to the Teaching Profession.*

Dr. D. Fraser Harris delivered an interesting lecture to the University Education Society of the University of St. Andrews on this subject on Monday last. Pointing out that the profession of teaching involved the highest physical and moral responsibilities in matters of conduct, he claimed that no science could be more closely related to these same matters of conduct than physiology. The physiology of circulation, respiration, digestion, excretion, and of the central nervous system should all be studied by the teacher if he is to help the State to combat the grave physical defects which the nation as a whole is now alleged to suffer from. Moreover, a study of physiology gives an insight into what is meant by inhibition, the development of which power in his pupils Dr. Harris ranked as the highest function of the teacher. The lecture, which was illustrated by diagrams, was listened to with marked attention and Dr. Harris may be considered to have advanced a powerful plea for knowledge of physiology among the instructors of our young.

*The University of Glasgow.*

The Right Hon. the Earl of Stair, K.T., LL.D., Chancellor of the University of Glasgow, died on Dec. 3rd at Lochinch, near Stranraer, after an illness of five weeks' duration. The Principal communicated the announcement, which had been telegraphed to him by Viscount Dalrymple, to his colleagues at a special meeting the same afternoon. The Senate adopted the following minute as a permanent record of the sad event :—

The Senate has received with deep regret the intelligence of the death of the venerable Chancellor of the University, the Right Hon. the Earl of Stair, K.T., who died this morning at Lochinch in the eighty-fifth year of his age. Lord Stair had faithfully served the University as its Chancellor for 19 years. The Senate desires to record its warm appreciation of his loyalty to the interests of the University and of the keen sense of duty and the manly, upright, and generous character which commanded universal respect and esteem. The Senate mourns the loss of a Scottish noble who was so long the head of the University and so worthily bore the honours and fulfilled the obligations of his high place and ancient name.

The clerk of the Senate has forwarded a copy of this minute to Lord Dalrymple conveying at the same time an expression of the Senate's deep sympathy with the family of the deceased earl. Representatives from the Senate, the University Court, and other bodies connected with the University attended the funeral which took place on the following Monday, on which day as a token of respect no classes were held within the walls of the University.

*Death of William Douglas Pringle, M.B., B.Ch. Aberd.*

Many Aberdeen graduates will learn with deep regret of the death of Dr. William Douglas Pringle, Lieutenant I.M.S., aged 26 years, which occurred at Tientsin, China, on Sept. 3rd last, and news of which has just reached this country. Lieutenant Pringle graduated at Aberdeen in 1900 with distinction in the third and final professional examinations. He was an Anglo-Indian but he rapidly adapted himself to his new surroundings and became one of the most popular men of his year. While at the University he took an active interest in athletics, being a good oar, a strong swimmer, a keen pedestrian, a brilliant shot, and an all-round sportsman. After graduating he passed into the Indian Medical Service, taking the ninth place in the entrance examination. His death was due to dysentery.

*Tuberculous Cases in Aberdeen Royal Infirmary.*

In connexion with the appointment of managers of the infirmary attention has been directed to the reports of the

directors for the past four years, with special reference to cases of phthisis and tuberculous disease. From the figures of the reports it was shown that during the four years 1899 to 1902 there had been 380 cases of phthisis received, out of which five recovered, 214 improved, and 80 died. During the same period 81 patients had been taken away "at desire or having been unfit." The matter of erecting a sanatorium somewhere on Deeside where sufficient and efficient provision would be made for the treatment, arrest, and, if possible, the eradication of the disease and the benefits of which would be within the reach of all, has been under the serious consideration of the directors for some time. Plans of a building have been prepared and negotiations are in progress for the acquisition of land for the erection of a sanatorium to be equipped in the light of the most recent scientific discoveries and experience. Quite recently the directors had a consultation with the medical officer at the head of the sanatorium at Nordrach-on-Dee as to the plans of the proposed building and a large amount of information was placed before the directors which will be of great value when the building comes to be erected. With the comparatively limited resources of the Royal Infirmary it has been impossible to give the full and undivided attention of the staff to the particular branch of disease in question, but on a limited scale the principle of the outdoor treatment of consumptives has already been tried at Woolmanhill and so far the results have been satisfactory, the patients under treatment eating much better and being in every way improved in strength. Sufficient time, however, has not yet elapsed to enable any definite conclusions to be made as to the effect of the treatment. With reference to the small number of recoveries of patients the important fact must be borne in mind that most of the cases which are admitted to the infirmary are already in an advanced stage and therefore practically beyond hope of cure.

Dec. 8th.

## IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

### *Royal College of Surgeons in Ireland.*

AT a meeting of the President, Vice-President, and Council of the Royal College of Surgeons in Ireland held on Dec. 3rd the vacancy caused by the death of Sir George Duffey was filled by the appointment of Dr. Michael McHugh to the post of professor of materia medica.

### *The Granard Nursing Quarrel.*

What has been known as the Granard nursing quarrel seems after a duration of nearly 12 months to be now drawing to a close. At a meeting of the guardians held on Dec. 7th a letter was read from the Roman Catholic bishop of the diocese which, while blaming the Local Government Board for "a glaring miscarriage of justice," stated definitely that he would not permit the nun nurses to return to the hospital at Granard. After a long discussion and many threatening remarks directed towards the medical officer of the union hospital, whose complaints are looked upon as the cause of the whole trouble, the board decided on appointing a trained nurse to hold office permanently.

### *Union Medical Officers of Ireland.*

A long letter has appeared in the morning papers from Mr. McArdle in which he denounces the recent suggestion of the President of the Royal College of Surgeons in Ireland that union medical officers should be chosen by an examination held by a competent examining board. Mr. McArdle considers that such an arrangement would be a most unfair interference with the rights of the popularly elected guardians and would be "contrary to the spirit of the age." However that may be, there can be no doubt that in the election of a Poor-law medical officer in Ireland the very last thing that is considered is the candidate's merit as evidenced by his career as a student or by the value of the medical qualifications which he holds. Practically all those elections are decided by political or religious motives, or by the fact that the candidate has some influential relative on the board. After his election the same factors settle his career. The poor for whose sake he is appointed may find him stupid and incompetent. It does not matter so long as he avoids dismissal by the Local Government Board and he has no sort of incentive to do better—promotion being unknown in this unique service. In the circumstances it is not surprising that the President of the Royal College of Surgeons should have made a suggestive attempt to improve such a state of things and to solve an important but most difficult problem.

### *The Sterilisation of Milk in Schools.*

At a meeting of the committee of the Dublin branch of the National Association for the Prevention of Tuberculosis held at the Royal College of Physicians, Kildare-street, on Dec. 1st, attention was drawn to the recently published annual report of the Registrar-General for Ireland, from which it appears that the death-rate from tuberculosis during the year 1902 was 2·7 per 1000 of the population. The committee also considered the important question of the dissemination of the disease by means of infected milk and the following motion was passed unanimously:—

As tubercular infection is the most frequent cause in young people, not merely of ordinary consumption but of bone and joint diseases, meningitis, and many forms of lung disease not ordinarily registered as consumption, and as milk derived from even apparently healthy cows may contain the tubercle bacillus and is believed to be capable of infecting human beings, and especially the young, with tuberculosis—Resolved—That the attention of the principals of boarding schools and public institutions for the young be called to the above facts and to the desirability of sterilising milk before its use by those under their charge. Further, that they be informed that this advice is in conformity with regulations issued last year by the Minister of Public Instruction in France.

### *Health of Belfast.*

At the usual monthly meeting of the city corporation of Belfast held on Dec. 1st it was reported that the town clerk was directed to make inquiries as to the possibility of obtaining the services of a medical expert having experience in connexion with the treatment of consumption in sanatoriums to act in conjunction with the medical superintendent officer of health in advising the health committee on these matters. The health of the city during the past five weeks had continued satisfactory. Typhoid fever had decreased as well as scarlet fever and the type of the latter disease was mild. The death-rate was 17·9 per 1000. There were 1030 births and 618 deaths (including 54 from zymotic disease, 95 from phthisis, and 125 from diseases of the respiratory organs). The council has decided to contribute £300 for the removal of decaying sea-weed from the Cultra foreshore in Belfast Lough. No discussion has so far taken place on Professor J. Lorrain Smith's report.

### *Attendance on Children's Hospitals.*

For several years the Senate of the Royal University of Ireland obliged candidates to have a certificate of having had "personal charge" of six cases of diseases of children and of six cases of diseases of women. A few years ago the rule suddenly (no one can explain the reason) disappeared from the Royal University of Ireland calendar and now a "personal" attendance on midwifery cases is all that is required, notwithstanding the fact that a separate paper is given on gynæcology and diseases of children. The absurdity of the rule is that students must have "personal charge" of at least ten fever cases and yet no separate paper or examination is held on fevers. The clinical teachers in Dublin are anxious to have the former rule re-enacted.

### *The Royal Victoria Hospital, Belfast.*

The lot of the resident surgeons in charge of the extern department is rapidly becoming a most difficult one owing to the exacting demands of the working-class subscribers who criticise the treatment, make the most flimsy complaints, and in many cases demand admission, not from the urgent need of their accidents or ailments but solely on the ground that they are subscribers. Recently the Belfast trades' council publicly discussed the way in which one of its members had been treated at the hospital and sent a deputation to the board of management demanding an inquiry which was held, the upshot of which was to exonerate house surgeons, nurses, and all concerned with the Royal Victoria Hospital. The result of the Workmen's Liability Act has been to cool largely the enthusiasm of employers for hospitals, as they are obliged to pay a heavy insurance now to protect themselves against accidents to their workers, and they naturally feel that the workers themselves should contribute to the upkeep of the places in which they are treated, while as a natural consequence the employers are beginning to regard hospitals as clubs, at least this is what is rapidly approaching in Belfast. The time of the resident superintendent of the hospital and of busy members of the board of management is being constantly taken up and absurdly and uselessly

wasted in settling the most miserable and utterly without foundation complaints. As a natural consequence the old idea that hospitals are charities will soon disappear.

*Army Medical Examinations.*

Professor T. Sinclair of Belfast has been appointed examiner in surgery at the army medical examinations.

Dec. 8th.

## PARIS.

(FROM OUR OWN CORRESPONDENT.)

*Births and Deaths in France for 1902.*

STATISTICS of the population of France for 1902 have just been published. There are 83,944 more births than deaths, or an increase over the figures for 1901 of 11,646. This favourable result is not due to an increase in the number of births but to a marked diminution in the number of deaths. As a matter of fact, in 1902 the number of births was 11,896 less than in 1901 and the number of deaths was 22,442 less than in 1901. The increase in the birth-rate is therefore only apparent, for in reality the birth-rate has again diminished. In 1902 the population increased by 22 per 10,000 inhabitants, a figure slightly higher than that for 1901, which was 19 per 10,000. Even this figure, however, was better than the mean for the decennium 1891–1900 when it was only 6 per 10,000, for during the decennium in question there were four years in which the deaths exceeded the births. Despite the small progress shown of late the state of France as regards increase of population remains unsatisfactory, especially if it be compared with that which obtains in other countries of Europe.

*The Society for Aiding the Wounded.*

In 1899 the Society for Aiding Wounded Soldiers founded at Paris in the Rue de Vanves a dispensary under the charge of Dr. Guyon, a member of the Institute and of the Academy of Medicine. This dispensary did such excellent work in instructing ladies who were willing to act as nurses with the ambulances in time of war that six provincial towns followed the example of Paris in providing dispensaries for training ladies of the red cross. At Lyons, Marseilles, Reims, Cherbourg, Vannes, and Evreux dispensaries are at work and give certificates to nurses when trained. This year the following additional towns have followed suit: Bordeaux, Grenoble, Nancy, Rennes, St. Malo, Boulogne-sur-Mer, Epernay, Tours, and Le Mans. It is evident that eventually all provincial towns of any importance will do the same.

*Dr. Marmorek's Serum.*[1]

The meeting of the Academy of Medicine held on Dec. 1st was almost entirely devoted to a discussion upon Dr. Marmorek's serum, of which I have already given your readers an account. M. Dieulafoy gave a *résumé* of the conclusions to which he had come after seeing some experiments undertaken in his wards with his leave by Dr. Marmorek. They are anything but encouraging. Patients who exhibited pyrexia did not improve and one patient in whom the temperature was not raised showed a rise after the first injection. Expectoration increased to double or triple its former quantity and as for the evolution of tuberculous lesions secondary lesions appeared around the primary foci after the injection of the serum. Out of seven patients treated two survived, the other five dying at periods varying from two to 11 months. Dr. Marmorek then made some experiments upon guinea-pigs at the Hôtel Dieu. Eight guinea-pigs were infected with the bacillus tuberculosis in culture, four were then given the serum and the other four were kept as controls. The four which had received the serum died before those which had not received it. M. Le Dentu followed with his experience which only related to one case. The patient suffered from tuberculosis of the upper end of the tibia. He received 15 injections of serum without showing any improvement and Dr. Marmorek then desisted. The surgeon then scraped out the tuberculous focus and promptly the patient, who was saturated with the so-called antituberculous serum, showed an exacerbation of symptoms. First the knee became invaded, then the lungs; the leg was amputated and the patient died two months after the serum treatment had begun. M. Monod, who followed, said that in sundry cases of articular and glandular tuberculosis he had observed some improvement but no cure. It is well known, however, that localised forms of tuberculosis in the limbs or in the glands often tend to spontaneous recovery with rest and slight surgical interference. M. Hallopeau tried the serum in seven cases of tuberculosis of the skin which were under his care at the St. Louis Hospital. Some cases showed no results but in one patient ulcers appeared at the sites of inoculations which were indurated just as if tuberculosis virus had been inoculated. At the meeting held on Dec. 8th M. Lucas Championnière said that one patient under his care appeared to improve at first but at the end of five days he died from tuberculous meningitis.

[1] Dr. Marmorek's original paper appears in full at p. 1642.—ED. L.

*Crookes's Bulbs for Radio-therapy.*

In cancer of the tongue, the uterus, and the rectum treatment by the x rays is almost impossible, for these organs are so deeply seated and are so protected by healthy or bony tissues that application of the rays is almost impossible without running the risk of setting up severe x ray burns. To obviate this difficulty M. Oudin has had constructed some Crookes's bulbs fitted with an ebonite handle which the surgeon can hold and so apply the rays locally without the risk of bringing about x-ray burns of the overlying tissues. M. Oudin exhibited these new bulbs at a meeting of the Academy of Sciences which was held on Nov. 25th.

Dec. 8th.

## SWITZERLAND.

(FROM OUR OWN CORRESPONDENT.)

*Psycho-therapeutics in General Practice.*

AT the last semi-annual meeting of Swiss medical men which took place at Olten on Oct. 31st and which was attended by over 200 medical men from all parts of Switzerland Professor Dubois of Bern, lecturer on diseases of the nervous system, spoke on Psycho-therapeutics. He disregarded hypnotism and referred solely to treatment by suggestion of various nervous ailments, such as neurasthenia, hysteria, and some forms of hypochondriasis, which he thinks should be considered as psychical affections and not merely as nervous ailments. A correct diagnosis which carefully excludes organic disease is of great importance, as also is the fact of impressing the patient with the curability of his ailments. In short, convince him and he is cured. This doctrine he demonstrated by reference to remarkable cures effected in the space of a few weeks of patients of many years' duration. The medical man treating such cases must have a great deal of tact and a certain amount of will force and patience, and must not be nonplussed by the various complaints of his patients. He must be well versed in science, literature, religion, and philosophy, and enter into all the details of the ailments complained of and make use of the information thus obtained to effect a cure by appealing in turn to the patient's will force, to his affections, and to his sense of duty. The practitioner should devote considerable time daily to each patient and should avail himself of psychical treatment on every occasion and should not waste his patient's time in trying all sorts of so-called cures. All other systems of treatment in vogue only tend to confirm the patient in his belief that he is seriously ill and make him a helpless invalid who is a burden to himself and a distress to his fellows. With regard to special treatment Professor Dubois referred his audience to his "Leçons de la Psychonévrose." At the end of his lecture he made the astonishing statement that he had never been obliged to resort to hypnotic medicine, such as bromides, chloral, sulphonal, &c., to procure sleep for his patients, but that suggestion had always proved successful. His remarks well deserve careful consideration in these days of ever-increasing nervous disease and it is unfortunately only too obvious that "*si duo faciunt idem non est idem*," or, in other words, that the general practitioner will have to be content to march at a certain distance in the rear of his able instructor in psycho-therapeutics. In any case this form of treatment will be welcomed by all those medical men who have many reasons for distrusting and discrediting hypnotism.

Zürich, Dec. 5th.

## AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

*Medical News.*

LITTLE of medical interest has occurred during the last month. The small-pox epidemic seems to have died out in Tasmania and no fresh cases of plague have occurred in any

of the States. The Bill to amend the Lunacy Act in Victoria, an outline of which was given last month, has been read a second time in the Legislative Assembly and discussed in Committee. Some opposition was shown to the provisions for the constitution of a Board of Lunacy and further consideration was postponed.

*Health Society of Victoria.*

The annual meeting of the Health Society of Victoria was held on Oct. 10th. His Excellency the Governor presided and gave an interesting address, in which he observed that statistics showed that public sanitation was steadily diminishing the death-rate, but there was also need for bringing home to the people the necessity for regulating their own lives in accordance with well-known principles of hygiene—what was called "personal hygiene"—and that was what the society was trying to accomplish. He believed the first principles of sanitation should be taught in the schools. He did not see why the pulpit should not be sometimes employed for teaching obedience to the laws of health, which were the laws of God. The more healthy a community was as a whole the more virtuous it was likely to be. The report of the council stated that there had been an increase in membership during the year. The usual series of "health lectures for the people" had been given and meetings for women had been held in the suburbs.

*Hospital Affairs*

Hospital Sunday, Oct. 24th, in Melbourne was, as it usually is, a wet day. The collections, however, amounted to very nearly the same as last year, a little under £4000. His Majesty the King has been graciously pleased to confer the title "Royal" on the Prince Alfred Hospital, Sydney. It has been found that the system of having clinical assistants at the Prince Alfred Hospital has not been a success and the board of directors has decided at the termination of the present appointments to abolish the positions and to appoint additional honorary assistants to those departments which need them. The conference of delegates from the hospitals on the proposed Hospitals Amending Bill held its final meeting in Melbourne. The recommendations of the subcommittee (which were outlined in a former communication) were agreed to, except the most important one of all, that relating to the mode of election of the honorary medical staff. The committees of the metropolitan hospitals were all so hostile to the proposal of an electoral college that it was abandoned by the conference. It affirmed that the honorary staff should *not* be elected by the subscribers.

*Obituary.*

Mr. William H. Goode, B.A., M.D., M.Ch. Dub., died at his residence, Macquarie-street, Sydney, on Oct. 13th, after a prolonged illness. Dr. Goode, who was a native of Ireland, was educated at Trinity College, Dublin, where he graduated as M.B. in 1867 and M.D. in 1876. The following year he obtained the diploma in State medicine. His early career was spent in the Royal Navy. He served on H.M.S. *Dido* on the African coast and subsequently on the Australian station. He retired from the navy in 1878 and settled in Sydney where he soon had an extensive practice. He was one of the first surgeons to the Prince Alfred Hospital. Afterwards he was surgeon to the Sydney Hospital and to the Hospital for Children. For many years he was medical officer to the Randwick Asylum. From the commencement of the Sydney Medical School Dr. Goode was lecturer on medical jurisprudence and public health. He was a member of the board of health and took a keen interest in its work. He was also one of the official visitors to the hospitals for the insane. Dr. Goode held a very high position in the profession in Sydney and will be much missed both by his colleagues and his patients.

The country profession in Victoria has suffered a very severe loss by the untimely death of two of its most capable members—Dr. G. L. Palmer of Ararat and Dr. R. H. Ritchie of Horsham. George Langlands Palmer was a native of Victoria. He was educated at the Geelong Grammar School and the Melbourne University, where he graduated M.B. in 1882. Almost immediately he obtained the position of resident surgeon at the Ararat Hospital. After holding it for some years he resigned to commence private practice in the town. He became honorary surgeon to the hospital and had a considerable surgical and consulting practice. Dr. Palmer was an exceptionally careful and capable practitioner and was a most genial, lovable character. Extremely conscientious and upright in all his dealings, he was generous to a fault and always ready with a joke. He endeared himself to all his patients and was a type of man the country can ill afford to lose.

Robert Henry Ritchie was born at Bega in New South Wales. His medical education was begun at Guy's Hospital and School, London, and finished at Melbourne University, where he graduated M.B. in 1894. After graduation he was appointed resident medical officer to the Melbourne Hospital. He then settled in Horsham and was surgeon to the local hospital. In spite of bad health he did some excellent work and contributed several papers to the Medical Society of Victoria. He was the first surgeon in Australia to perform amputation of a leg under spinal cocainisation. Personally he had a most winning manner and a delightful disposition. His ability was far above the average and but for his poor health he would undoubtedly have taken a very high position. The cause of his death was pulmonary tuberculosis.

Nov. 3rd.

# Medical News.

TRINITY COLLEGE, DUBLIN.—At the final examination in midwifery held in Michaelmas term the following candidates were successful:—

Thomas H. Gibbon, George B. M'Caul, Reginald H. Lee, Herbert St. M. Carter, David Gray, Harry R. Nelson, Philip S. Stewart, Winslow S. S. Berry, Thomas C. A. Sweetnam, Samuel H. Vickery, Frederick F. C. Willington, John C. Hall, Frederick W. Bury, and Herbert Stone.

UNIVERSITY OF CAMBRIDGE.—At the congregation on Dec. 5th Mr. J. M. Martin, Peterhouse, received the M.D. degree. Dr. W. L. Dickinson, Dr. H. D. Rolleston, and Dr. T. H. Kellock have been appointed as additional examiners for the third M.B. examination.

VACCINATION STATIONS.—At the meeting of the Chard board of guardians held on Nov. 23rd it was resolved to send to every union in the south-west of England a copy of a motion recently passed by the guardians in favour of reverting to "stational" vaccination, in consequence of the increased cost of vaccination since the passing of the Vaccination Act.

ATTEMPTED MURDER OF A MEDICAL MAN.—Mr. Justice Darling took a serious view of the attempted murder of Mr. George Whittenbury White at the Fir Vale Workhouse Infirmary, a short account of which was published in THE LANCET of Nov. 28th, p. 1545. On the conviction of the prisoner by a jury of attempt to murder, Mr. Justice Darling sentenced him to penal servitude for life. Punishment has here followed quickly upon the heels of crime.

SPECTACLE MAKERS' COMPANY.—Alderman Sir George Faudel-Phillips presided on Tuesday last at the Mansion House at a meeting of the special sight-testing committee appointed by the Spectacle Makers' Company to consider the advisability of including sight-testing in the company's syllabus. The witnesses examined by the committee have expressed themselves, under certain limitations, in support of the movement, in regard to which it is stated that oculists and the trade will be consulted.

MEDICO-LEGAL SOCIETY.—At a meeting of this society held on Dec. 8th at 20, Hanover-square, W., Sir William J. Collins, the President, in his address commented upon the width and possibilities for development of forensic medicine; he hoped it would soon assume its legitimate status in the medical curriculum. The society should deal with such subjects as (1) coroners' law amendment; (2) the present position of professional secrecy; (3) the attitude to be taken with regard to secret remedies; and (4) other "residual" topics neglected alike by lawyers and medical men. He paid an eloquent tribute to the life-work and memory of Mr. Herbert Spencer. Mr. John Troutbeck (treasurer) read a paper on Inquest Juries. After great experience he defended their present utility, showing, however, that in several directions they had lost their primitive significance and importance. The average voter was well qualified to serve as a juror; a large jury was a check upon "cranks"—he would consider seven or nine as sufficient. The lack in London of centralisation of medico-legal work was as deplorable as its opportunities were unique.

The President, Mr. Walter Schröder, Mr. William Lewis (of the Treasury), Dr. Harvey Littlejohn, Dr. F. J. Smith, Mr. W. A. Brend, and Mr. S. B. Atkinson continued the discussion. In his reply Mr. Troutbeck urged either a better class of registrar or early official medical inspection of all certificates of death.

BRISTOL ROYAL HOSPITAL FOR CHILDREN.—It is hoped to raise £4000 for the endowment of the "Mark Whitwill Ward," which is the form of memorial that has been decided upon to perpetuate the memory of the late Mr. Mark Whitwill. Up to the present time £2788 have been received.

CONFERENCE ON THE TRAINING AND SUPPLY OF MIDWIVES.—Lord Monkswell, chairman of the London County Council, took the chair on Dec. 2nd at a conference convened by the Association for promoting the Training and Supply of Midwives to consider the methods and means for promoting the training and supply of midwives. The conference was held at 2, Cromwell Houses, London, and was well attended by ladies and others interested in the movement. The chairman in a few opening remarks asked for an expression of the opinion of those present as to whether the London County Council should administer the provisions of the Midwives Act in the metropolis or whether the borough councils should be intrusted with the work. Later in the course of the proceedings the chairman put the question directly to the meeting and it was found that those present were in favour of the London County Council discharging the duties to be carried out under the Act, only one lady voting against it. The two principal speakers in favour of the London County Council being the authority intrusted with the administration of the Midwives Act were Mrs. W. Bruce and Miss Rosalind Paget who strongly urged the step because it was necessary in the metropolis to insure the control of the midwives under one central authority. Most of the speeches had reference to a motion which was to the effect that the meeting was in favour of the work and aims of the Association for promoting the Training and Supply of Midwives and would do what was possible to further the work of organising the training of midwives on a sound basis. This motion was proposed by Miss A. Clifford, seconded by Lady Mary Glyn, and carried unanimously. Lady Mary Glyn, in the course of her remarks, expressed the strongest disapprobation of any scheme that involved "mixing up" midwifery with district nursing. Mrs. W. Bruce said that a good standard of training ought to be maintained and pointed out that a large sum of money would be required to secure the fulfilment of the objects of the association. Dr. J. R. Kaye of Wakefield sent a letter in which he urged that midwives should be utilised as district nurses, because in small villages it would be impossible for the midwife to make a living without also acting as a nurse. Miss Amy Hughes gave her reasons in great detail why nursing and midwifery should be combined, provided efficient supervision by fully competent women was secured. Mr. Shirley F. Murphy severely criticised the Midwives Act, calling it "An Act for the Prevention of the Practice of Midwives." He showed how impossible it would be to carry out the provisions of the Act in the case of many of the midwives who had been admitted on the roll by reason of the fact that many of them were unable to write and therefore would be unable to fulfil the requirements of the Act in regard to keeping a reasonable note of the cases which they attended. With reference to the supply of midwives he put the whole matter to the meeting very tersely by saying that the supply would depend upon the fees they were likely to receive. Sir Michael Foster deprecated the stringency of the regulations concerning midwives and observed that although it might be right to discuss the high standard the midwife of the future should attain at the present moment it was not wise to be too exacting. Provision had to be made for midwives in country districts and it had to be recognised that a midwife living in a small village could not earn a living from midwifery alone. It was, according to Sir Michael Foster, undesirable that nursing should be mixed up with midwifery but midwifery could be mixed up very well with looking after a small shop, or lodgers, or a husband. Funds were necessary, not to pauperise midwives but to enable women who by nature were qualified to be midwives to be trained so that they might make a living. Sir Michael Foster concluded with the following words: "Do not demand any extraordinary expenditure on the part of these women before they can begin to earn what will afterwards be a very limited livelihood." Many of the ladies availed themselves of the cordial invitation of the chairman to take an active part in the deliberations and the proceedings were followed with the closest attention by the audience.

BORIC ACID IN MILK.—The sanitary committee of the Exeter city council has just issued notices to the milk vendors in that city pointing out that the use of boric acid in milk is an offence under the Sale of Food and Drugs Act.

BY-LAW AGAINST SPITTING.—The Bristol city council at its meeting on Nov. 24th adopted a by-law against spitting in public places, the penalty being £1 for each offence.

BELGRAVE HOSPITAL FOR CHILDREN.—On Dec. 1st this hospital in its new situation in the Clapham-road, S.W., was opened for the reception of patients. The inauguration ceremony was conducted by the Bishop of Rochester who in the course of a few remarks said that the hospital had had a previous inauguration when Princess Henry of Battenberg came there in July last; the present occasion was of a simpler character and was a gathering together of friends and neighbours of the hospital to start it on its career of useful work with words of prayer and benediction. He said that though the Belgrave Hospital was an old one it was a new one in its present position and it had come to fill a much felt want on that side of the Thames. It would be found to be well arranged in every respect, its one fault being that it was not yet completed. £40,000 had been spent and it was earnestly hoped that the funds necessary for its completion would soon be forthcoming as an institution could not be said to be worked economically until all its capabilities were utilised to their fullest extent. The company then visited the wards, which already had two small occupants, and the operating theatre which with its fittings and sterilising chamber was presented by Mr. C. T. Dent to the hospital.

UNIVERSITY OF OXFORD.—An examination for a Radcliffe travelling fellowship of the annual value of £200 and tenable for three years will be held in Hilary term, 1904, commencing on Tuesday, March 1st. Candidates must have passed all the examinations required by the University for the degree of Bachelor of Arts and for the degree of Bachelor of Medicine. They must also have been placed in the first class in one, at least, of the public examinations of the University or have obtained some prize or scholarship within the University unattached to any college or hall and open to general competition among the members of the University. The successful candidate must before election declare that he intends to devote himself during the period of his tenure of the fellowship to the study of medical science and to travel abroad with a view to that study. The Regius professor of medicine and the examiners, two months before the expiration of the second year after the election of each fellow, present a report on the work done by him to the electors, who may, if they think the report unsatisfactory, declare the fellowship forfeited. The examination will occupy three days. Papers will be set in physiology, pathology, and preventive medicine, and a subject will be proposed for an essay. There will also be a practical examination in pathology. Intending candidates should send their names, addresses, and qualifications to "The Radcliffe Examiners, University Museum" on or before Tuesday, Feb. 9th, 1904.

HOSPITAL FOR CHILDREN WITH HIP DISEASE, SEVENOAKS.—The committee of management of this hospital has just appealed for help owing to the financial depression of last year and to the heavy tax on the giving capacity of local friends for the erection of the new building (the cost of which, we understand, has been about £10,000 and which was opened in 1902). Of 56 patients treated last year 33 were from London and of the remainder only six belonged to Sevenoaks. The staff being largely voluntary the expenses of management are small and the cost per patient averages 17*s*. The charge has been fixed at 7*s*. a week to make it possible for working people to send their children to the hospital or for charitable people to help them to do so. Of the 56 patients already spoken of as treated last year 17 were discharged as cured or convalescent, nine were otherwise dealt with, and 30 remained

in hospital. The committee claims that the great feature of the hospital is that the length of treatment is much greater than is possible in large hospitals, owing to so many urgent cases pressing for admission into the latter, which causes hip cases sometimes to be discharged before they are permanently benefited. Anybody interested is invited to go to the hospital and to see for himself what is being done there. This certainly seems to be a charity well worthy of support and the fact that a comparatively large number of cases come from London ought, we think, to appeal to Londoners.

# Appointments.

*Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ACLAND, JOHN MCKNO, M.R.C.S., L.D.S.Eng., has been appointed Honorary Surgeon Dentist to the Royal Devon and Exeter Hospital.

ANDREW, HENRY, L.R.C.P. Lond., M.R.C.S., has been appointed Honorary Anæsthetist to the Royal Devon and Exeter Hospital.

CARLING, ALBERT, M.A., M.B., B.C. Cantab., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer to the Queen Elizabeth Hospital and the Red Maids' Schools, Bristol.

DAVIES, EDWARD, L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Honorary Surgeon Dentist to the Queen Adelaide's Dispensary, Pollard-row, Bethnal Green, E.

DUDALL, BRENNAN, M.B., B.S., L.R.C.P. Lond., F.R.C.S. Eng., has been appointed Honorary Anæsthetist to the Royal Devon and Exeter Hospital.

EDWARDS, ARNOLD, M.D. Vict., Ch.B., has been appointed Honorary Assistant Surgeon to the Manchester and Salford Lock Hospital.

HEILBORN, W. E., B.A., M.B., B.C. Cantab., has been appointed Anæsthetist to the Royal Infirmary, Bradford.

MARTIN, ROBERT, L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer to the Banbridge Dispensary District.

MORGAN, FREDERICK CHARLES, L.R.C.P. Lond., M.R.C.S., has been re-appointed Resident Medical Officer to the Eastville Workhouse by the Bristol Board of Guardians.

PERROTT, CHARLES JOHN, L.R.C.P., L.R.C.S. Irel., has been re-appointed Medical Officer of Health for Kingswood.

ROBERTS, J. LLOYD, M.D., B.S., B.Sc., B.A., M.R.C.P. Lond., F.R.C.S. Eng., has been appointed Honorary Physician to the Royal Southern Hospital, Liverpool.

SEQUEIRA, JAMES H., M.D., M.R.C.P. Lond., F.R.C.S. Eng., has been appointed Physician in Charge of the Skin Department of the London Hospital.

SOLLY, REGINALD VAUGHAN, M.D., B.S., L.R.C.P. Lond., F.R.C.S. Eng., has been appointed Honorary Medical Registrar and Pathologist to the Royal Devon and Exeter Hospital.

WALKER, F. A., L.R.C.P. Edin., M.R.C.S., has been appointed Certifying Surgeon under the Factory Act for the Weymouth District of the county of Dorset.

WILLIAMS, FREDERICK MANN, M.R.C.S., L.R.C.P. Edin., D.P.H. Cantab., has been re-appointed Medical Officer for the Plymouth Port Sanitary Authority.

# Vacancies.

*For further information regarding each vacancy reference should be made to the advertisement (see Index).*

ARMY MEDICAL SERVICE.—Examination of Candidates for not less than 30 Commissions in the Royal Army Medical Corps.

BIRMINGHAM, JAFFRAY BRANCH OF THE GENERAL HOSPITAL, Gravelly Hill.—Resident Medical and Surgical Officer. Salary £150 per annum, with board, residence, and washing.

BRADFORD ROYAL INFIRMARY.—House Physician, unmarried. Salary £100 per annum, with board and residence.

BRIDGWATER INFIRMARY.—House Surgeon. Salary £80 a year, with board and residence.

BRISTOL ROYAL HOSPITAL FOR SICK CHILDREN AND WOMEN.—House Surgeon. Salary £120 per annum, with rooms and attendance.

CHELSEA HOSPITAL FOR WOMEN, Fulham-road, S.W.—Registrar. Honorarium £40 per annum.

DERBYSHIRE ROYAL INFIRMARY.—Senior House Surgeon. Salary £100 per annum, with apartments, board, &c. Also Assistant House Surgeon for six months. Salary at rate of £60 per annum, with apartments, board, &c.

EDINBURGH, UNIVERSITY OF.—Additional Examinerships in Materia Medica and Clinical Surgery.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark, S.E.—Eight Clinical Assistants.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway, N.—Senior House Surgeon, Junior House Surgeon, and Junior House Physician, all for six months. Salary of senior officers at rate of £80 per annum, of junior officers £30 per annum, with board, lodging, and washing. Also Assistant Anæsthetist. Honorarium 10 guineas per annum.

GREAT YARMOUTH, COUNTY BOROUGH OF.—Medical Officer of Health, Medical Officer of the Borough Isolation Hospital, and Port Medical Officer of Health. Salary £400 a year.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Resident House Physicians for six months. Honorarium of £25.

INDIAN MEDICAL SERVICE, India Office, London.—Examination for not less than 20 Commissions in His Majesty's Indian Medical Service.

LEEDS PUBLIC DISPENSARY.—Junior Resident Medical Officer. Salary £100, with board and lodging.

LIVERPOOL CANCER RESEARCH.—Assistant Director. Salary £200 per annum.

LIVERPOOL INFECTIOUS DISEASES HOSPITALS.—Assistant Resident Medical Officer, unmarried. Salary £120 per annum, with board, washing, and lodging.

METROPOLITAN HOSPITAL, Kingsland road, N.E.—Assistant Surgeon.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Hampstead, N.W.—Male Resident Medical Officer. Honorarium £60.

NEWPORT AND MONMOUTHSHIRE HOSPITAL.—Assistant House Surgeon. Salary £70 per annum, with board, residence, and washing.

NORTHAMPTON GENERAL HOSPITAL.—Assistant House Surgeon, unmarried. Salary £75 per annum, with apartments, board, attendance, and washing.

NORTH-EASTERN HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—Surgeon.

NORWICH, HEIGHAM HALL PRIVATE ASYLUM.—Assistant Medical Officer.

OLDHAM INFIRMARY.—Senior House Surgeon. Salary £100 per annum, with board, residence, and washing.

QUEEN'S JUBILEE HOSPITAL, Earl's-court, S.W.—House Surgeon for six months, renewable. Salary at rate of £52 per annum, with board, residence, and washing.

ROYAL EYE HOSPITAL, Southwark, S.E.—Refraction Assistants. Honorarium £40 for the year 1904. Also Honorary Clinical Assistants.

ROYAL LONDON OPHTHALMIC HOSPITAL (MOORFIELDS EYE HOSPITAL), City-road, E.C.—Assistant Surgeon.

ST. GEORGE, HANOVER SQUARE, PROVIDENT DISPENSARY, Little Grosvenor-street, W.—Resident Medical Officer. Salary £100, with allowance about £30, and residence.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester-square, W.C.—Honorary Assistant Physician or Honorary Assistant Surgeon.

ST. MARY'S HOSPITAL MEDICAL SCHOOL, Paddington, W.—Lecturer on Physics and Assistant Lecturer on Chemistry. Salary £100 per annum.

ST. PETER'S HOSPITAL FOR STONE, &c., Henrietta-street, Covent-garden, W.C.—Junior House Surgeon for six months, renewable. Salary at rate of £50 a year, with board, lodging, and washing. Also Clinical Assistants for Out-patients for six months.

SALFORD, COUNTY BOROUGH OF.—Assistant to the Medical Officer of Health. Salary £200 per annum.

SEAMEN'S HOSPITAL SOCIETY ("DREADNOUGHT"), Greenwich, S.E.—Junior Resident Medical Officer. Salary £40 per annum, with board, residence, and washing.

SHEFFIELD ROYAL HOSPITAL.—Assistant House Physician, unmarried. Salary £50 per annum, with board and lodging.

SOUTH DEVON AND EAST CORNWALL HOSPITAL, Plymouth.—House Surgeon. Salary £100, with board, residence, and washing.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—Assistant House Physician for six months. Honorarium at rate of £75 per annum, with board, lodging, and washing.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies as Certifying Surgeons under the Factory Act at Hanley, in the county of Stafford; at Cockermouth, in the county of Cumberland; and at Castle Bytham, in the county of Lincoln.

# Births, Marriages, and Deaths.

## BIRTH.

PRIDIE.—On Dec. 7th, at Wansford, Northamptonshire, the wife of H. Hampden Pridie, M.B., of a son.

## MARRIAGES.

GAVIN—STEVENSON.—On Dec. 3rd, at the Mission Church, Ahmadabad, Neil Murphy Gavin, F.R.C.S. Edin., to Maud Muriel Stevenson, M.B., Ch.B., daughter of the late Rev. W. Fleming Stevenson, D.D., Dublin.

NOVIS—TUNSTALL.—On Dec. 1st, at St. John's, Upper St. Leonards, Thomas Shepherd Novis, Captain I.M.S., 2nd Bo. Lancers, to Margaret Anne, youngest daughter of the late Captain Anthony Tunstall of Brighton.

PAYNE—HOWE.—On Dec. 5th, at St. George's, Hanover-square, W., Ernest Le Fevre Payne, M.R.C.S. Eng., L.R.C.P. Lond., L.S.A., to Helena, daughter of the late George Howe, of Brooklands, Cheshire.

## DEATH.

NEWMAN.—At Stamford, on Dec. 3rd, 1903, William Newman, M.D. Lond.

*N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

# Notes, Short Comments, and Answers to Correspondents.

## THE LIGHT CURE AND ELECTRO-THERAPEUTIC INSTITUTE, LIMITED.

A PROSPECTUS has been filed with the registrar of joint-stock companies and a copy has been forwarded to us setting out the advantages of securing shares in an institution called "The Light Cure and Electro-Therapeutic Institute, Limited." The directors are Sir Edward Noel Walker, K.C.M.G., formerly Lieutenant-Governor of Ceylon; Mr. J. W. Sidley and Mr. J. F. Shone, both of Hampstead; and Mr. Alderman D. S. Ward of Harrogate. The objects of the institute are to provide light cure and the more modern methods of electrical treatment for the general public, and to supply electric light and heat baths as substitutes for the Turkish bath. It is stated that the institution will be under the constant supervision of a thoroughly qualified medical gentleman with special experience, who has placed his services at the disposal of the institute. He is a brave man. If this institution proposes to carry on the treatment of all the dangerous and chronic conditions for which light cures and electro-therapeutics have been recommended, so far as we can see it will do an extensive trade as a quack association. Undoubtedly the prospectus attempts to provide for the situation by mentioning the constant supervision of this thoroughly qualified medical gentleman, but it must be remembered that if the institution is not run according to lines that satisfy the General Medical Council a thoroughly qualified medical man will cease to be thoroughly qualified, or to be qualified at all. It appears to be suggested that members of the public having "gout, rheumatism, lumbago and sciatica, catarrh and influenza, anæmia, obesity, neuralgia, insomnia, hysteria, and nervous affections generally" should have resort to the electric light baths of the institute; and the prospectus continues in its next paragraph: "The estimate arrived at and checked by experts ..... shows a very large profit upon the proposed capital." We can quite imagine that an institution proposing to embark in the West-end of London upon the treatment of the public generally, when suffering from such a list of diseases as that which we have set out, might make large profits. "The unique character of the institute and the style in which all the arrangements will be carried out should attract the patronage and support not only of the general public but also of the wealthy and fashionable circles," says the prospectus, and we think that the probabilities of the case are well gauged. But the question that concerns our readers is, Might the institute not do, as well as a good trade, a great deal of damage? Can we not imagine a member of the public, who thinks that his "anæmia" or his "obesity" constitutes his disease, walking off to the institute and paying his two guineas or his five guineas for a course of treatment that is especially bad for his general condition? The prospectus suggests that patients should be sent to the institute by medical men, but it does not suggest that the handsome estimated profits will be obtained if *only* such patients are received, while it is quite clear that the institute proposes to do a large medical business. The public can choose their own disease out of a long catalogue and can have any treatment they like if they pay for it. We need hardly indicate to our readers that such an institute is not a thing to be joined, and we shall be very much surprised to learn that any medical officer whose name is on the Register will be found to work for it. Such an institution can only be made really useful to the public if the management is in the hands of a strong medical and scientific directorate.

## THE BRITISH MEDICAL BENEVOLENT FUND.

THE TREASURER (Dr. S. West, 15, Wimpole-street, London, W.) begs to acknowledge the receipt of the following further special donations to the Fund in response to Sir William Broadbent's appeal:—

| | £ | s. | d. | | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Sir Anderson Critchett ... | 10 | 0 | 0 | Mr. J. B. H. Dawson (Sierra Leone) ... ... | 5 | 0 | 0 |
| Mr. Morton Smale ... ... | 5 | 5 | 0 | Mr. W. F. Brook ... ... | 1 | 1 | 0 |
| Mr. T. Corbett ... ... ... | 5 | 5 | 0 | | | | |
| "Thankoffering" ... ... | 5 | 5 | 0 | | | | |

## QUEEN'S HALL CONCERTS.

ALL lovers of music owe a debt to Mr. Robert Newman for the admirable concerts which he gives them. The Symphony concert on Nov. 28th was chiefly remarkable for a brilliant performance of Bach's Brandenburg Concerto No. 3. How the master of music's work was played it is needless to particularise. On Dec. 2nd the testimonial concert was given to Mr. Newman than whom nobody, with the possible exception of Sir August Manns, has ever better earned such an honour. The hall was very full and the programme was excellent with the exception that it was too long. To ask a hearer to listen for two and a half hours to such complex and emotional music as Beethoven's Egmont overture, Tchaikowsky's Pathetic Symphony, Wagner's Tristan overture, with the Liebestod and the Tannhauser overture with the Venusberg music is too much. Other items were the Casse Noisette suite and the Meistersinger overture. The former, though comparatively simple, makes demands on the mind by reason of its curious orchestration, there being striking contrasts of tone colour, such as, for instance, that obtained by a conversation between a celeste and a bass clarionet. Few persons consider what a wonderful analytical power the ear of one accustomed to listen to a big orchestra possesses. Not only can he tell at once what instrument out of some 15 different kinds is playing but he can detect any variation in pitch. This analysis, though carried out automatically, is tiring, and we think that those responsible for orchestral programmes should never arrange a concert of more than one and a half hours' duration. Mr. Wood is a master conductor and his band is as good as a band can be, but there is no use in working a willing horse to death. All concerned made the testimonial concert a success and we cordially congratulate them.

## THE POOR-LAW ADMINISTRATION AND INFANT MORTALITY.

*To the Editors of* THE LANCET.

SIRS,—It is needless in a medical journal to discuss the amount or dangers of high infant mortality but I should like to mention one of the causes and also point out how that cause is likely to increase and how it may be diminished. Dr. A. Newsholme in his well-known work on "Vital Statistics" says that one of the causes is the omission on the part of the parents to call in medical aid soon enough. Mr. A. E. Harris, the medical officer of health of Islington, in a recent report attributed many of the deaths from measles to the same cause. Recently, in an Oxfordshire village a large number of children had diphtheria and went about in this condition and even attended school with their throats swathed up, no medical man being in attendance on them. It is needless to multiply instances and the reason is obvious. Poor people of the labouring class cannot afford to pay doctor's bills or even to subscribe to clubs. If the baby is upset or a child has a sore throat a father or widowed mother will hesitate to call in a medical man when the result will be (even on the very moderate terms on which medical men attend poor people) that the family have to go without dinner for several days. But it will be said that the Poor-law provides a medical man for the poorest. Yes, so it does; but unfortunately there are a "hard school" of so-called Poor-law reformers. These people have persuaded many boards of guardians to use methods of deterring poor people from applying for medical relief, such as giving all medical relief on loan (in the first instance), or compelling the parent to come before the committee. In unions which have adopted these measures "medical relief" has largely diminished and I think it is practically certain that this must have caused much suffering and in some cases death. I think the attention of the medical profession and of the Local Government Board should be drawn to this subject.

I am, Sirs, yours faithfully,

Oxford, Dec. 3rd, 1903. J. THEODORE DODD.

## THE JOHN JAMES JONES SANATORIUMS.

FROM a paragraph in a recent newspaper it would seem that the Gainsborough board of guardians have not been much edified by the treatment to which a consumptive young woman who had been sent by the board to one of the John James Jones sanatoriums at Sandgate had been subjected. The relieving officer of the board went to Sandgate and found that the girl occupied a small bedroom with three other persons and was fed with food of a second-class quality. He also found, as all readers of THE LANCET could have warned him that he would, that at these homes there was no "open-air treatment" whatever in the medical or technical sense of the word. The patients just had the use of the open air of the streets. The relieving officer appears also to have reported that in the sanatorium the sheets and the table cloths were interchangeable. Communications have recently been forwarded to us showing that a medical man named Gore has taken upon himself the highly responsible title of medical officer to these sanatoriums. We think that Mr. Gore's position in the matter must be looked into by the General Medical Council.

## PICTURE POST-CARDS AND THE HOSPITALS.

*To the Editors of* THE LANCET.

SIRS,—I do not see why the hospitals should not participate in the profits to be obtained from the rage for picture postcards and I therefore beg to suggest a scheme for benefiting the hospitals which seems to me to be quite workable. My idea is that the hospitals should have a number of assorted picture postcards prepared with views of the hospital buildings and hospital scenes and should ensure the exclusive use of these designs, and that on each card underneath the picture should be a line commencing with: "Received from ....." (and then the name and amount should be written in) "as a contribution to ..... hospital." Then the card should be posted direct to any person who applied to the hospital for the picture postcard and enclosed a minimum sum for each card, say 3*d.*, which would pay for the cost of the postage stamp ½*d.*, the cost of the postcard, and leave a margin to the hospital. The hospital could reckon the card as 1*d.* (although it would not cost that to produce) and thus the contribution would be 1½*d.* Before leaving the hospital the postcard might, if necessary, be stamped with a distinctive die to ensure authenticity. Each card of the hospital series should be numbered, say, "Guy's No. 1," "Guy's No. 2," and so on, so that any collector of picture postcards would be able to get any particular one of the series he wished for. If this should be thought to entail too much work at the hospitals perhaps King Edward's Hospital Fund could take charge of the issue of the different series of postcards for

some of the hospitals and thus centralise the clerical work. As to whether dealers should be supplied would be a moot question, but if they were it seems to me that they should be supplied at 3*d.* per card less equitable amount for the cost of distribution and their profit, and even then the postcards should only be supplied to dealers taking large numbers. I do not suppose that the cost of the photographic reproductions would be very costly to the hospitals as there are sure to be some philanthropic photographers who would prepare the necessary plates for little or no charge if allowed to print their names and perhaps a word or two on the cards.

I am, Sirs, yours faithfully,

London, Dec. 1st, 1903. A WELL WISHER OF THE HOSPITALS.

## THE PRICE OF A BATH AT HOTELS.

*To the Editors of* THE LANCET.

SIRS,—Your remarks in THE LANCET of Oct. 3rd, p. 968, on this subject are particularly gratifying to an Australian. In the grandest hotel in Australia and the poorest bush public-house if they have the water you can have a bath *free*. They are very far behind in this matter in the old country. My income is very small and when I found in an hotel in Edinburgh I had 14*s.* a week to pay for washing myself I had to leave, and then there was NO shower or hot water laid on. I went to a large boarding-house in London which suited me in every thing but one—no bath-room. The charming landlady assured me the thing was already in hand and would be completed in a fortnight. I stayed there six months and the same tale continues to be told to any newcomer who happens to have clean habits. Out of about 40 people, mostly women, I found no advocates for the daily bath. It is one of the greatest discomforts we have to put up with visiting England and may your remarks have some effect on those catering for strangers, more particularly colonials.—I am, Sirs, yours faithfully,

Oct. 3rd, 1903. M. M. IRVING.

## THE VAGINAL DOUCHE.

*To the Editors of* THE LANCET.

SIRS,—Referring to Dr. G. Crichton's letter in THE LANCET of Nov. 28th, p. 1547, he is in error in stating that the central opening at the end of vaginal tubes is a fault common to all such syringes. Speaking for ourselves, we can state that we have never sold such a tube during the past 24 years and we believe that the same answer could be given by other surgical instrument houses of repute. We know the fault does exist in some syringes on the market and equally serious defects in similar instruments when not obtained from reliable sources, but we think a general statement of this nature should only be made after full inquiry. We are, Sirs, yours faithfully,

DOWN BROS., LTD.

St. Thomas's-street, London, S.E., Dec. 2nd, 1903.

## PSEUDO (?) ANGINA PECTORIS OCCURRING IN CASES OF MITRAL STENOSIS.

*To the Editors of* THE LANCET.

SIRS,—In THE LANCET of Nov. 21st, p. 1431, records are given of pseudo(?) angina pectoris occurring in cases of mitral stenosis under the care of Dr. Graham Steell. Dr. H. Waldo recently kindly drew my attention to a well-marked case in one of his wards, but it is not upon that case that I have any right or desire to comment. The point which it has occurred to me may have escaped the notice of some is the occasional presence of well marked fibrosis of the cardiac muscle in cases of mitral stenosis. The patches of fibrous tissue may reach the size of the nail of the little finger, not a large size, but sufficiently large to be very definite. I regret to say that I have not examined the clinical histories of the cases in which this fibrosis has been present in order to ascertain whether there had been any cardiac pain during life, but the absence of pain would not materially detract from the interest of the occasional association of fibrosis of the cardiac muscle with mitral stenosis, because it is only in the minority of any cases of such fibrosis that marked pain occurs. Although, however, severe cardiac pain is much less common than fibroid disease of the cardiac muscle, in fatal cases of angina pectoris fibrosis of the cardiac muscle is almost invariably present. The occurrence, therefore, of fibroid disease of the cardiac muscle in some cases of mitral stenosis suggests that the pathology of cardiac pain, when it occurs in this variety of valvular disease, does not materially differ from that of the pain present in cases in which valvular disease is absent. The same remark applies to aortic valvular disease, in which disease fibroid degeneration of the myocardium is common.

I am, Sirs, yours faithfully,

Clifton, Bristol, Dec. 3rd, 1903. THEODORE FISHER.

## PATENT MEDICINES.

*To the Editors of* THE LANCET.

SIRS,—I venture to think that Dr. R. Hutchison has omitted reference to one very important factor in his very interesting paper on Patent Medicines, published in THE LANCET of Nov. 28th, p. 1492, and that is the power of suggestion.

It is useless to deny that these extensively boomed remedies do good in a large number of cases, otherwise their proprietors would not flourish as exceedingly as they do, and neither can it be denied that the improvement or cure obtained in many cases assuredly cannot be the direct result of the particular preparation that has been swallowed. I believe, therefore, that a large percentage of these widely advertised nostrums owe their success entirely to the influence of suggestion and that it does not signify a row of pins how inept or inert their composition may be provided that the ailment and the patient be sufficiently "suggestible."

Of course, it does not matter a jot to the sick man whether he is restored to health by suggestion or by drugs—he simply wants to get well—and I doubt if there is much potential of harm intrinsically in the multitude of "pills" and "powders" and "tonics," &c., the quacking advertisements of which do their suggestive work for good or for ill without ceasing; indeed, probably greater harm is done by the amateur but well-meaning prescriber who dispenses potent drugs ignorantly.

It seems to me that the only way to get rid of the pest that infests the columns of the daily and weekly press (not wholly to their disadvantage) is by the better education of the public and the greater recognition on our own part of the mental factor in the treatment of disease by drugs. Surely it is time to have done with such unscientific methods as the giving of placebos and the happy-go-lucky prescribing of drugs in various neurasthenic states of which the general practitioner sees so much nowadays. The olden time practitioner was content with his stock-in-trade treatment by medicine, and medicine, and always medicine—possibly "Little Mary" was a more troublesome child then. In these more enlightened times drugging as a method of treatment is taking a less and less important place and the tendency is to supplant, to supplement, or to obscure it by other therapeutic methods, such as electricity, hydropathy, massage, rest, &c. Might we not take a leaf out of the quack's book and employ suggestion after a scientific method both in the waking as well as in the hypnotic condition?

I am, Sirs, yours faithfully,

Brighton, Dec. 1st, 1903. STANLEY NOBLE.

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*L.R.C.P.I.*—We observe that the extract from the newspaper speaks of one gentleman and that our correspondent's letter speaks of another with a similar name, and we presume that the same individual is meant. We do not consider that there is any proof of "self-advertisement," as our correspondent styles the paragraph. It is our experience that such paragraphs are generally supplied to the lay press by well-meaning friends. It must not be assumed that they are sent by the medical man mentioned in them, to whom they bring considerable annoyance sometimes.

*Nemo.*—The person is the usual quack, the whole game of whose existence is to deceive the public.

# Medical Diary for the ensuing Week.

## OPERATIONS.

### METROPOLITAN HOSPITALS.

**MONDAY (14th).**—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.).

**TUESDAY (15th).**—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Royal Ear (3 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.).

**WEDNESDAY (16th).**—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

**THURSDAY (17th).**—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

**FRIDAY (18th).**—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.).

**SATURDAY (19th).**—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

## SOCIETIES.

**MONDAY (14th).**—MEDICAL SOCIETY OF LONDON (11, Chandos-street, Cavendish-square, W.).—8.30 P.M. Discussion on Functional Albuminuria—(1) Introductory, The President (Dr. F. de Havilland Hall); (2) Its Pathology, Dr. J. R. Bradford; (3) Its Clinical Bearings, Dr. Samuel West.

**TUESDAY (15th).**—PATHOLOGICAL SOCIETY OF LONDON (20, Hanover-square, W.).—8.30 P.M. Paper:—Dr. C. J. Martin: Methods of Estimating Blood Pressure. And other communications.

CHELSEA CLINICAL SOCIETY (Chelsea Dispensary, Manor-street, King's-road, S.W.).—8.30 P.M. Cases:—Dr. Vinrace: (1) Selected Cases of Skin Disease; (2) Gould's Apparatus for the Treatment of Lupus. Communications: Dr. F. Palmer: (1) Some Observations on the Rationale of certain so-called Drink-Cures; (2) A few Statistics relating to Hereditary Immunity, with special reference to Vaccination.—Dr. J. D. E. Mortimer: Anæsthetics in Abdominal Operations.

**WEDNESDAY (16th).**—ROYAL MICROSCOPICAL SOCIETY (20, Hanover-square, W.).—8 P.M. Mr. P. W. W. Baker: Exhibition of a Series of Slides illustrating the Development of an Ascidian. Paper:—Dr. G. J. Hinde: On the Structure and Affinities of the Genus Porospharra.

ROYAL METEOROLOGICAL SOCIETY (Institute of Civil Engineers, Great George-street, Westminster, S.W.).—7.30 P.M. Papers:—Mr. W. Marriott: Some Account of the Meteorological Work of the late James Glaisher, F.R.S.—Mr. J. R. Sutton: On certain Relationships between the Diurnal Curves of Barometric Pressure and Vapour Tension at Kimberley, South Africa.

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

**MONDAY (14th).**—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Mr. Dunn: On the Modern Aspect of Sympathetic Cyclitis (so-called Sympathetic Ophthalmia).

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. G. Little: Clinique. (Skin.) 5.15 P.M. Dr. C. O. Hawthorne: The Clinical Anatomy and Physiology of the Nervous System.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS (9, Conduit-street, Hanover-square, W.).—8 P.M. Paper:—Mr. W. Henman and Mr. H. Lea: The Royal Victoria Hospital, Belfast.

**TUESDAY (15th).**—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. R. H. Cole: Insanity in Relation to Crime.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. J. Taylor: Clinique. (Medical.) 5.15 P.M. Mr. J. Cantlie: Life Insurance as Affected by Life in the Tropics.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury).—3.30 P.M. Dr. A. Turner: Gait in Nervous Diseases.

GLASGOW OPHTHALMIC INSTITUTION (126, West Regent-street).—8 P.M. Demonstration of Ophthalmoscopic Cases, Stereoscopic and other Photographs, Pathological Specimens, and Microscopic Slides. The Diagnosis and Treatment of Glaucoma. (Post-Graduate Course.)

**WEDNESDAY (16th).**—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Beddard: Practical Medicine.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. H. L. Barnard: Clinique. (Surgical.) 5.15 P.M. Dr. C. O. Hawthorne: The Clinical Anatomy and Physiology of the Nervous System.

**THURSDAY (17th).**—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Mr. Baldwin: Practical Surgery.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. Hutchinson: Clinique. (Surgical.) 5.15 P.M. Dr. C. O. Hawthorne: The Clinical Anatomy and Physiology of the Nervous System.

SAMARITAN FREE HOSPITAL FOR WOMEN (Marylebone-road, N.W.).—3 P.M. Dr. Bell: Retroflexion and its Treatment.

THE HOSPITAL FOR SICK CHILDREN (Gt. Ormond-street, W.C.).—4 P.M. Mr. Colyer: Syphilitic and Rachitic Changes in the Teeth in Childhood.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST (7, Fitzroy-square, W.).—5 P.M. Mr. R. Lake: Demonstration of Cases of Tuberculous Laryngitis. (Post-Graduate Course.)

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN (Leicester-square, W.C.).—6.15 P.M. Dr. M. Dockrell: Tuberculosis of the Skin. (Chesterfield Lecture.)

**FRIDAY (18th).**—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Mr. Bidwell: Chronic Pancreatitis.

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## METEOROLOGICAL READINGS.

*(Taken daily at 8.30 a.m. by Steward's Instruments.)*

THE LANCET Office, Dec. 10th, 1903.

| Date. | | Barometer reduced to Sea Level and 32° F. | Direction of Wind. | Rain-fall. | Solar Radia in Vacuo. | Maximum Temp. Shade. | Min. Temp | Wet Bulb. | Dry Bulb. | Remarks at 8.30 A.M. |
|---|---|---|---|---|---|---|---|---|---|---|
| Dec. | 4 | 29·42 | S.W. | 0·12 | 62 | 48 | 36 | 44 | 45 | Cloudy |
| ,, | 5 | 29·22 | S. | ... | 39 | 29 | 36 | 36 | 37 | Foggy |
| ,, | 6 | 29·57 | W. | ... | 42 | 42 | 30 | 33 | 35 | Overcast |
| ,, | 7 | 29·44 | S. | ... | 49 | 47 | 35 | 39 | 42 | Overcast |
| ,, | 8 | 29·29 | S.W. | 0·12 | 59 | 49 | 40 | 41 | 43 | Cloudy |
| ,, | 9 | 29·20 | S.W. | 0·15 | 67 | 53 | 43 | 47 | 48 | Raining |
| ,, | 10 | 29·12 | S.W. | 0·17 | 57 | 49 | 43 | 46 | 48 | Stormy |

**During the week marked copies of the following newspapers have been received:** *Shrewsbury Chronicle, Wakefield Express, Highland News, Wallington and Carshalton Herald, Reading Mercury and Oxford Gazette, Western Mail South Wales Daily News, Western Gazette, Westminster Gazette, Carlisle Journal, Dublin Evening Mail, Daily News, Aberdeen Free Press (Weekly), Surrey Advertiser, Bristol Mercury, Dublin Express, Morning Post, Sanitary Record, Local Government Chronicle, Hertfordshire Mercury, Army and Navy Gazette, Burton Chronicle, &c.*

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